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The Hunterian Lectures

ON

THE EVOLUTION OF THE PELVIC FLOOR IN THE NON-MAMMALIAN VERTEBRATES AND PRONOGRADE MAMMALS.

Delivered before the Royal College of Surgeons of England on March 4th and 7th, 1910,

BY R. H. PARAMORE, M.D. LOND., F.R.C.S. ENG.

LECTURE I.—NON-MAMMALIAN VERTEBRATES.

Delivered on March 4th.

INTRODUCTION.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—In order to appreciate the significance of the pelvic floor musculature in man it has seemed necessary to me to investigate the several homologous anatomical conditions existing in the main types of the primary groups of the vertebrates, and to inquire into the manner in which anatomical structure has reacted to a modification of external environmental forces, in order that the internal visceral requirements of the individual, in spite of such change, might still continue to be satisfactorily met.

It may be thought that such an investigation, however interesting, is almost superfluous, and that an examination of the pelvic floor in the dissecting-room would suffice to explain how it acts in the living. Anyone who thinks so should look into the literature of the subject, and he will find that paper after paper has appeared, founded on an anatomical basis, but leading to no definite, clear, irresistibly convincing conception of the function of this musculature. According to Sappey, of all the muscles in the body the levator ani has been the most studied but is the least understood. No one would be content with the result of dissection to come to a conclusion concerning the functions of an organ, such as the liver, although such dissection will show that it receives all the blood from the intestine, and must therefore in some way be intimately related to the assimilation of food. It is only by experiment in the living that the functions of the liver have been disclosed, and it is only in a similar way that the functions of the pelvic floor can be revealed. Physiological experiment has, indeed, shown that by appropriate stimulation a living muscle fibre becomes shorter, and that by such contraction is capable of doing work, of moving limbs, &c.; but such inquiry will not demonstrate the reason of its activity in the body, although it shows the manner of it. It is only by such investigations as those instituted by Professor C. S. Sherrington with such brilliant and revolutionary results that the functions of various muscle groups concerned in the causation of various definite limb movements are becoming to be understood. It may be possible that such laboratory experiments, if arranged to demonstrate the functions of the levator ani, will solve the riddle of its existence; but such experiments can only be successful when the conditions calling the function of the muscle into play are provided, and this provision depends on considerable knowledge, which appears at present to be scarcely forthcoming. It is not, therefore, to the result of some such experiment I ask your attention, for none, as far as I know, has been performed. There is another, perhaps surer, way of studying the subject, and that is the investigation of the results obtained in that huge physiological laboratory, which is coextensive with the domain of Nature, and in which experiments have been in progress ever since life began. For Nature, by endowing the individual with the power of adaptation to new surroundings, which such individual may have been coerced to enter, as the result of some geologic disaster or climatic change, or from persecution of companions, or hunger, or from other causes, has permitted adaptive alterations in structure to occur—which we believe are necessarily correlated with the forces that caused them—so that the individual, in spite of that change, might continue to exist. That is to say, Nature has allowed a series of physiological experiments to be made, the results of which lie buried in the bodies of the present-day survival of types, more or less unaltered, of those passed individuals.

It may be supposed that such results throw but little light on the condition in man; but when we remember that the mechanism of life in all is similar, and that it depends on identical essentials, the application of such experiments must be admitted. The vertebrates are not only built on one plan, but the physiological mechanism of the living cells of which they are composed, which constitutes their life, is identical. The necessity for oxygen, the necessity for food, the necessity for reproduction, is the same in each. By altering the means by which these necessities have had to be obtained, a corresponding alteration in structure has been brought about, and thus the survival of the species safeguarded. It is this structural change, in so far as it concerns the pelvic floor, that we have to study. But this by itself can be of little service; to understand the structure in any type we must at the same time consider, as far as we are able, the conditions of the physiological experiment in question, whereby the particular variety of structure has been brought about.

FISHES.

A pelvic floor can scarcely be said to exist in the fish, for the pelvis is rudimentary. In the dog-fish (Fig. 1) the pelvic girdle is represented merely by a transverse bar of cartilage placed just in front of the cloaca. It is unconnected with the vertebral column except by means of that part of the lateral trunk musculature which extends forwards from the tail into the body, and which, as it passes over the pelvic bar, sends a good strand of its lowermost fibres to be inserted into its upper lateral part. This strand of fibres, which forms part of the ventral tail musculature, from which it cannot be differentiated, is directed from behind forwards to the pelvic bar and may be called the *caudo-pelvic strand*. Behind the cloaca it abuts upon the median line and is in apposition with the similar strand of the opposite side. As these two strands are traced forwards to reach the pelvic bar they diverge to allow the cloaca to pass between them, which they thus embrace. So, if a pelvic floor can be described in the dog-fish, it is evidently formed by the innermost margins and adjacent parts of the caudal extensions of the lateral trunk musculatures, which I have ventured to call the caudo-pelvic strands.

This lateral trunk musculature of the fish forms the most conspicuous part of its body. That part of it which forms the musculature of the tail passes in an uninterrupted way to the skull. In the dog-fish it consists of fibres horizontally placed, and is easily divided into two parts—a dorsal and a ventral—by the well-marked lateral line. In front of the pelvic bar, however, the lower part of the ventral musculature, that which encloses the body cavity, is formed of a thin sheet, the fibres of which are obliquely placed. These arise from the connective tissue enclosing the lower longitudinal fibres and pass obliquely downwards and forwards towards the median ventral line. But the fibres which arise from the anterior border of the pelvic bar pass directly forwards. There is no line of demarcation between the oblique fibres and the median longitudinal ones, but the former merge imperceptibly into the latter. The oblique fibres correspond to the internal oblique and the median longitudinal to the recti abdominis muscles of higher vertebrates.

In Protopterus—one of the Dipnoi—the anatomical relations of the cloaca, and the parts immediately behind the pelvic plate, are similar to those found in Scyllium canicula, except that the transformation of the pelvic fins into slender cylindrical processes, and the displacement of the cloacal opening from the median line to the left side, cause corresponding differences. The caudo-pelvic strand of muscle fibres is present on each side. They arise as oblique fibres from the ventral axial skeleton of the tail, and they pass downwards and outwards and forwards, and then inwards to become attached to the pelvic plate and the median line. Anterior to the pelvic plate, they are continuous with a layer of oblique fibres, which passes downwards and forwards, similar to that in the dog-fish, and which takes part in the formation of the ventral body wall. But besides this internal oblique layer, another layer of oblique fibres, directed downwards and backwards—i.e., caudalwards—exists in Protopterus; so that in this vertebrate the abdominal wall consists of two distinct layers, easily distinguished from

each other by the different directions of their fibres, the superficial corresponding to the external oblique of higher vertebrates. A comparison of the ventral abdominal wall of Protopterus with that of the dogfish also shows that the former is not only relatively, but absolutely, thicker than that found in the latter, so that there is not only a structural change in the obliquity of muscle fibres, but also an absolute addition. These external oblique fibres reach as high up as the lateral line from which they arise, and are inserted into the median ventral line; they also extend as oblique fibres into the tail.

It is to be noticed in Protopterus that the fibres of the dorsal part of the lateral trunk musculature are also oblique, not longitudinal as in the dog-fish, their direction being exactly the opposite of those of the external layer of the ventral part. Since the paired fins in Protopterus, on account of their cylindrical form, can scarcely have much, or any, effect in controlling ascent or descent whilst swimming, whatever the cause of the appearance of the external oblique muscles of the ventral wall may be, it seems as though the oblique disposition of the dorsal fibres may have arisen to counteract the effect of the former, and by variations of contraction in each to enable the fish to change its course whilst swimming either obliquely upwards or downwards.

A muscular diaphragm, corresponding to the thoracic diaphragm of mammals, does not exist in the fish; but the region containing the heart is cut off from the rest of the body cavity by the septum transversum.

The cloaca in the fish does not appear to possess a sphincter muscle. Neither in the dog-fish (Fig. 1) and

FIG. 1.

Dissection of cloacal region of the Dogfish. About half life size. P, Pelvic bar bisected and turned outwards. C.P., Caudo-pelvic strand.

Protopterus, nor in the mackerel and herring have I been able to find one. In the former, the caudo-pelvic strands with the pelvic bar or plate appear to serve as a closing apparatus; whilst in the latter, a distinct muscle bundle arises from the median dense tissue and tips of ventral spines immediately behind the cloaca, and passes forwards, one on each side of it, along the median ventral line of the fish. In front of the cloaca these two muscle bundles are united together by connective tissue and on contraction cause a bilateral compression of the cloaca.* But no ring-like muscle exists. It would seem, indeed, that a closure of the cloaca by means of a special sphincter muscle is not so necessary for the fish as it is for terrestrial animals; for fish live in a medium—water—the specific gravity of which is not very different from that of their bodies, and the pressure exerted by this medium on all sides of the animal will tend of itself to prevent an extrusion of any part from within, such as excrement or ova. Their shape, and the compactness of their viscera, are sufficient evidence of this pressure; which varies, of course, with the depth of the fish from the surface, and may be very considerable. In vertebrates, however, which live on the land, and whose bodies, therefore, are surrounded by a medium of a greatly diminished specific gravity, quite different conditions exist; for the medium cannot, because of this physical difference, have the same effect on the contents of the cloaca, around the orifice of which in the great majority of terrestrial vertebrates, a distinct sphincter muscle is to be seen.

When, however, in the dog-fish an escape of visceral contents becomes a necessity, it is plain the pressure bearing upon the cloaca from without, and which opposes such escape, can only be overcome by an increased pressure within—i.e., an increased visceral pressure; for the contents of the viscera can only be expelled by means of a pressure effect, in which the pressure within the oviduct, for instance, becomes greater than that of the medium by which the fish is surrounded. This, in the case of the ejection of excrement, may be met by the contraction of the gut musculature; but such ejection will be more effectual if the body-wall musculature surrounding the viscera, responding by an increased contraction, increases the pressure to which they are already subjected. That such increased visceral pressure, brought about by contraction of the body-wall musculature, is a real factor will, I think, be admitted when it is remembered that the size of the ova passed, at least in the dog-fish, is very considerable (Huxley [16]).† This seems to explain the existence of the oblique fibres in the ventral wall of the dog-fish; for their direction is such that their contraction will determine an increase of pressure towards the cloaca. Such an end as the voluntary increase of visceral pressure, by the increased contraction of the enclosing musculature, would be impossible, or difficult to achieve, or, at least, it would not be so efficiently performed, were all the fibres of the trunk placed longitudinally. The fixation posteriorly of the pelvic bar, which is effected by the caudo-pelvic strands, and the limitation of the size and dilatability of the cloaca, which this fixation causes, may also be a factor, necessitating an increased visceral pressure during the passage of ova; and this is in keeping with the fact that in many of the higher animals, including man, a similar difficulty occurs, constantly during parturition, and commonly during defæcation, and which is certainly not due to the medium in which these animals dwell, but to a very different cause.

In Protopterus, an increased visceral pressure is also necessary during aerial respiration for expiration. It is plain before a fresh supply of air can be taken that the volume of the lungs must be somewhat reduced. This can only be accomplished by a compression of the viscera amidst which the lungs lie, and is produced by the pressure of the medium about the animal, and supplemented by the increased contraction of the enclosing musculatures. In Ceratodus, a dipnoi, which is entirely aquatic, and which only occasionally rises to the surface to breathe—i.e., to swallow air, its blood being oxidised, as in the majority of fish, by means of the well-developed internal gills—the pressure of the water without will probably suffice to effect expiration, when the sphincter of the glottis is relaxed. But when the water drains away from the swampy places in which Protopterus lives, and exposes it to air, and during its long æstivation this force exerted by the water is lost: thus it necessarily follows that the contraction of the enclosing muscles must be increased to obtain the same result as before.

Although the increased thickness of the musculatures enclosing the visceral mass in Protopterus may perhaps be explained by the greater activity necessitated by wriggling movements in partially inspissated mud, the development of an additional muscle layer of oblique fibres, passing downwards and caudalwards seems to have been caused by such a necessity as that of a frequently recurring forced expiration; for the direction of their fibres is such that their contraction will determine an increase of pressure towards the pharynx.

In support of this, we find that whilst in Ceratodus the lung exists as a large unpaired sac, in Protopterus the lungs are paired, their structure much more sacculated and more lung-like, the internal gills have partially atrophied, and the heart has evolved further; and side by side with these visceral changes and different habits, that the ventral wall musculature in Ceratodus shows no trace of the second external oblique layer, which is so conspicuous in Protopterus (Wiedersheim [36]).

Such considerations as these seem to offer adequate explanations for the origin and the marked development in the fish of the caudo-pelvic strands on either side of the cloaca on the one hand and the oblique fibres in the ventral part of the lateral trunk musculature on the other, the essential function of which evidently is to effect an increase of the internal visceral pressure.

AMPHIBIA.

In the amphibia development has proceeded further. A great change has taken place in the pelvis, in that a bony process, the ilium, already present as an outgrowth in some

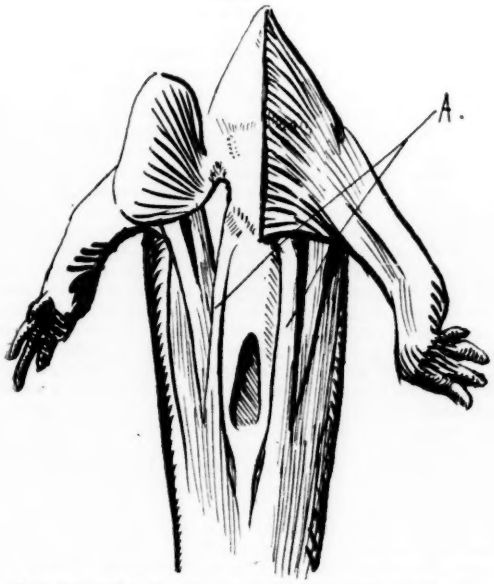
* See Holl, p. 260, see reference 14.

† The superior figures relate to the Bibliography which will be printed at the end of Lecture II.

of the fishes (as in Chimaera monstrosa: Wiedersheim), has grown dorsally on each side from the pelvic plate, passing upwards in the tissues of the lateral trunk wall towards the spine. In some species, as in the Salamander, this ilium has reached and has become attached to the rib of the single sacral vertebra by an articulation, which allows a to-and-fro movement of the pelvis upon the spine; but in others, as in Menobranchus, this upgrowth has remained incomplete, so that the pelvis is freely moveable. It is significant to notice of these two species, whilst the adult form of the Salamander lives entirely on the land and does not possess gills, Menobranchus is wholly aquatic and large external gills are conspicuously present.

Next, dissection shows the existence of a pair of muscles arising from the ventral part of the tail skeleton in the middle line, at some distance from the pelvis, diverging as they pass forwards, one on each side of the cloaca, to be inserted into the posterior edge of the pelvic plate (ischia). (Figs. 2 and 3.) We have here, indeed, the caudo-pelvic strands of the dog-fish, segmented off from the lateral trunk musculature, and in Salamander, forming distinct and individual muscles. But in Menobranchus, whilst these muscles are as distinctly defined anteriorly as they are in Salamander, posteriorly they merge into the ventral tail musculature and thus appear to be continuations of it. Anteriorly these muscles are so placed that their surfaces look upwards and downwards, and their edges laterally, the median borders being only separated from each other by a small interval. As each muscle is traced distally it becomes

FIG. 2.



Dissection of Menobranchus, showing caudo-pelvic muscles A. The cloacal passage has been cut through on a plane with these muscles and the superficial parts have been removed.

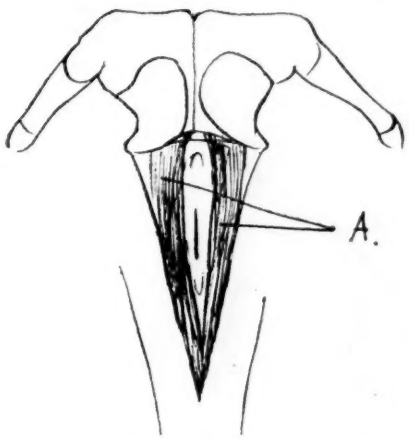
twisted on its long axis, so that its superior surface becomes internal, and it thus presents a broad surface to the cloacal passage as it passes by it; at its origin from the tail it is vertically placed, and is contiguous with its fellow of the opposite side.

The abdominal wall in Menobranchus consists, besides the recti, of three distinct layers: an external, the fibres of which pass downwards and backwards or caudalwards; a middle, the fibres of which pass downwards and forwards; whilst the fibres of the innermost layer pass almost directly downwards and inwards, forming the transversalis, which is first met with in the tailed amphibians. It is interesting to notice that the direction of the fibres of the dorsal part of the trunk musculature (that dorsal to the lateral line) is also oblique, the fibres passing downwards and forwards as in Protopterus. In the Salamander the external and internal oblique muscles are well developed, but an inner layer of transverse fibres, corresponding to the transversalis, does not exist. Recti abdominis are present.

In neither Menobranchus nor in Salamander maculosus have I been able to discover a sphincter cloacæ. Since the Menobranchus is entirely aquatic, the absence of such a sphincter may be more easily understood. Its absence in the purely terrestrial Salamander seems to find an explanation in the well-developed caudo-pelvic muscles. Since these arise from the median line of the tail, and are inserted into the pelvic plate in such a fashion that their inner borders almost reach the middle line, when they synchronously contract, the pelvis being fixed by the recti, they will exert a bilateral compression of the cloaca, and apparently this is sufficient to effectually occlude its passage.

A survey of the conditions found in Menobranchus and the Salamander maculosus seems to show that the evolutionary advance trended towards the fixation of the pelvis to the

FIG. 3.



Dissection of Salamander maculosus to show A, caudo-pelvic muscles.

vertebral column, and that this is associated with greater variations of internal pressure, due to an increase in general activity. The change in the method of respiration, compared with that of the Dipnoi, is not very great. When this is carried out by means of the lungs, the air is forced into them by an act similar to that of swallowing; whilst expiration is effected by an increase of the contraction of the abdominal wall musculature—i.e., by an increase of the internal visceral pressure. Since the recti abdominis and external obliques are attached to the pelvis, their contraction can only become efficient by a fixation of this structure. This fixation was primarily attained by the development of the caudo-pelvic muscles, which thus anchored the pelvis posteriorly. These muscles are relatively of considerable length, and pass caudally from the pelvis almost in the same straight line as the recti abdominis, and thus are admirably adapted to resist a displacement of the pelvis forwards which contraction of the recti tends to bring about. Moreover, since these muscles are attached to the pelvis as broad horizontal bands abutting upon the median line, besides fixing the pelvis, they also prevent the escape of pressure impulses posteriorly; and further, by resisting these impulses, tend to increase the pressure effect. The frequent occurrence of these variations in internal pressure, not only necessary for expiration but also incidental to general activity, and of importance as an accessory circulatory mechanism, is also associated with the further development of the abdominal wall musculature and with the evolution of the caudo-pelvic muscles. Indeed, the correlation of these two factors—the need for an increased visceral pressure on the one hand, and for efficient enclosing muscular walls on the other—is such—the former being so plainly dependent on the latter—that they take on the forms of cause and effect.

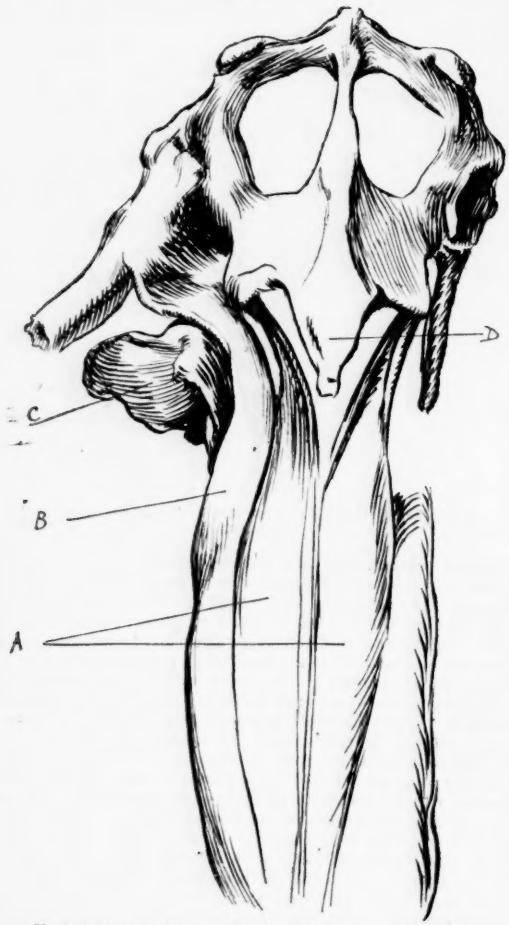
REPTILES.

The condition found in reptiles is extremely interesting. At least two sacral vertebræ are present, which are either ankylosed or bound together by fibrous tissue, whilst the fibro-cartilage which connects the ends of their ribs and forms a single broad area for the attachment of the ilium

further restricts any movement between them. This sacro-iliac articulation is placed behind the acetabular joint and may permit a certain amount of a to-and-fro movement of the pelvis on the spine, as in Iguana and Emys, or the pelvis may be immoveably fixed to the spine, as in the Crocodile. The pelvis is completed inferiorly by the junction of the pubic and ischial bones which may form a single median symphysis.

In Iguana the caudo-pelvic muscles are conspicuously present (Fig. 4), but instead of a single muscle two are found on each side, one being much larger than the other (Fig. 6). The larger caudo-pelvic muscles are of considerable length and are superficially placed, one on each side of the cloaca,

FIG. 4.



Ventral view of Iguana, showing pelvis. A, A, The large antero-posterior caudo-pelvic muscles. B, The caudo-femoral muscle of the right side attached to femur. C, The sling; the attachment of the sling to the hypo-ischium, D, has been cut through and turned outwards.

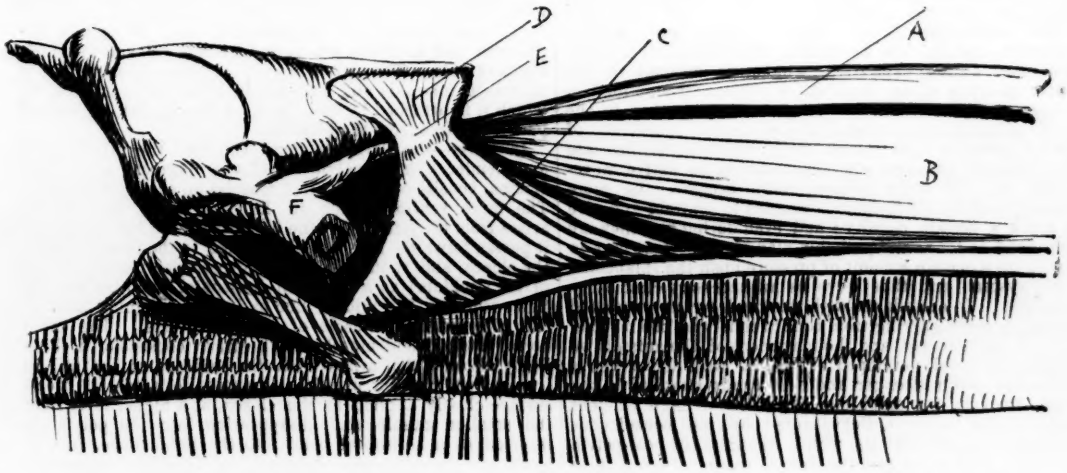
behind which their median borders are in apposition, where they arise from the tail by an extensive origin. Traced forwards they rapidly diminish in size and give rise to a tendon which is inserted into a bony protuberance on the ventro-lateral aspect of the pelvis. The much smaller and much shorter caudo-pelvic muscle is placed on the inner and deep side of the larger muscle, which thus hides it from view. It arises from the fascial septum in the angle between the diverging larger caudo-pelvic muscles immediately behind the cloaca, and passes forwards and outwards, crossing the dorsal (deep) surface of the larger muscle, to be inserted into the ventro-lateral aspect of the pelvis, immediately behind the posterior lip of the acetabulum, on a more dorsal plane and more laterally to the insertion of the larger (caudo-pelvic) muscle. The larger and smaller caudo-pelvic muscles are quite distinct from each other, and at their insertions are separated by an interval; but they are so closely related that it seems not unlikely they are differentiated parts segmented off from a single parent muscle.

Filling up the big space between the spines of the chevron bones internally and the superficial tail musculature externally, and placed immediately dorsal to the belly of origin of the larger caudo-pelvic muscle which partially hides it from view, is the large caudo-femoral muscle (Figs. 4 and 5), the origin of which reaches anteriorly the caudal limit of the pelvis, and here suddenly passes outwards over a sling to reach and be attached to the upper part of the femur. This sling (Fig. 5), over which the caudo-femoral muscle passes, is formed by a tendon interposed between two muscles—a dorsal and a ventral. The dorsal muscle—which, from its similarity to a muscle found in the Tortoise (Emys) may be called the *lateral caudo-pelvic muscle*—arises from the transverse processes of the anterior caudal vertebræ; its posterior fibres pass downwards and forwards, but its anterior fibres, which form much the thicker part, pass almost directly downwards to end in the short flat tendon forming the sling referred to. The other muscle, which serves to keep this tendon in place, arises from the hypo-ischium and passes outwards and upwards to be inserted into the tendon. Besides retaining the upper part of the caudo-femoral muscle in place, this mechanism, with that of the opposite side, is also capable of exerting a bi-lateral compression upon the pelvic continuation of the body cavity and the cloaca, which is very evident on dissection.

The body wall musculature, in which ribs are embedded, consists, besides the recti, of three layers—the external and internal oblique and transversalis muscle. The ribs pass obliquely downwards and backwards in a series almost as far as the pelvis, the last two or three being short; anteriorly their ventral ends are united to a sternum, but posteriorly they lie freely in the ventral part of the flank musculature. The transversalis muscle exists as a continuous layer placed between the pelvis and the anterior limit of the thorax. It covers the internal aspects of the ribs, ventral to their angles from which it arises, and its fibres pass transversely to the ventral mid-line, thus crossing the ribs obliquely. In the abdomen its relations are similar to the corresponding mammalian muscle. On the dorsal wall of the thorax internally a muscle is present on each side, which arises from the vertebral column and passes obliquely outwards and forwards to be inserted into the ribs at their angles by slips which interdigitate with the slips of attachment of the transversalis, and which gradually become shorter and shorter as the neck is reached (vertebro-costalis). The heart is shut off from the peritoneal cavity by the pericardium and a fibrous septum which may contain muscular tissue, but the lungs lie freely in the dorsal and anterior part of the cœlom, their basal parts related on each side to the liver and stomach, their upper (apical) parts passing forwards on each side of the heart towards the neck. A muscular diaphragm separating the thorax from the abdomen is not present.

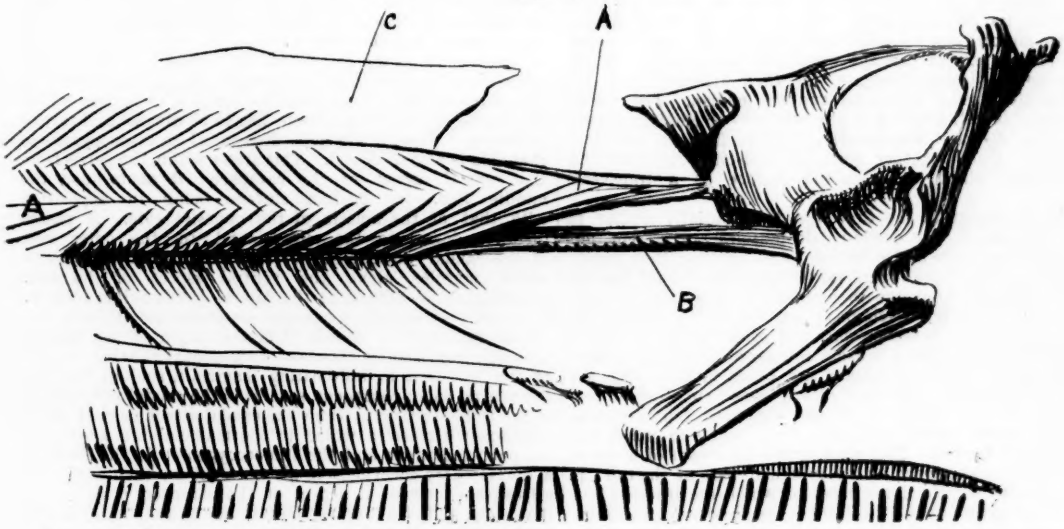
A comparison of the anatomical conditions of such a reptile as Iguana (which is more or less typical, at least of the lacertilia) with that of the terrestrial amphibians, such as Salamander maculosa, coupled with a comparison of their habits and mode of life, shows that the advance in structure, which is self-evident, is due to an increase in general activity and to a change in respiration which is correlated with this advance. Owing to the presence of ribs inspiration is effected by a bilateral expansion of the fore part of the trunk (thorax), by which mechanism a much larger quantity of air is caused to enter and distend the lungs than would be possible by the amphibian force-pump action of the mouth and pharyngeal floor alone. That expiration is a muscular act is shown by the existence of the well-marked intra-thoracic muscles (transversalis and vertebro-costal muscles), the function of which plainly is to determine an increase of intra-thoracic pressure, and by causing a diminution of the thorax to result in the ejection of the respired air from the lungs. To this end they are aided by the abdominal wall musculature, which clearly participates in expiration; for unless the visceral pressure in the abdominal region were increased during expiration, increase in the thoracic pressure would as easily cause a displacement of the lungs posteriorly into the abdomen as it would cause the ejection of air anteriorly, and thus be only partially effective. Indeed, as we ascend the vertebrate series we find the lungs, which in the Dipnoi

FIG. 5.



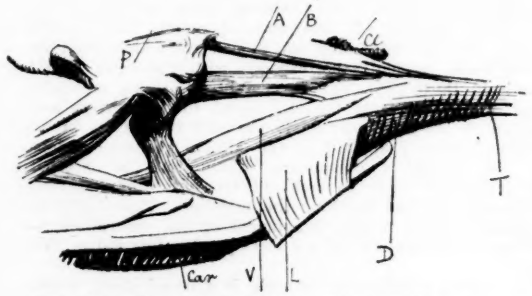
Dissection of Iguana from right side showing A, large antero-posterior caudo-pelvic muscle; B, caudo-femoral muscle and sling in position. The sling consists of a dorsal muscle, C, lateral caudo-pelvic muscle, and a ventral muscle, D, arising from hypo-ischium, and an interposed tendon, E. F, Femur with attachment of caudo-femoral muscle.

FIG. 6.



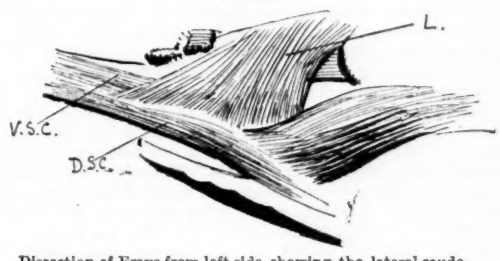
Dissection of Iguana from the left side. The sheet of superficial tail musculature, C, has been cut through and turned upwards with the large antero-posterior caudo-pelvic muscle, A, to which C is attached, by which means the small antero-posterior caudo-pelvic muscle, B, is displayed. The lateral caudo-pelvic muscle, the caudo-femoral muscle, and the femur have been removed.

FIG. 7.



Dissection of Emys from right side. P, Pelvis. Cl, Cloaca. T, Tail. A, Small ventral antero-posterior caudo-pelvic muscle (attached to pelvic outlet ischium). B, Large dorsal antero-posterior caudo-pelvic muscle (entering pelvis to be attached to pelvic inlet?). L, Lateral caudo-pelvic muscle cut through at the ventral attachment and turned outward. V, Ventral sacro-coccygeus. D, Dorsal sacro-coccygeus muscle. Car, Carapace.

FIG. 8.



Dissection of Emys from left side showing the lateral caudo-pelvic muscle, L, in its natural position enclosing the cloaca, the antero-posterior caudo-pelvic and ventral sacro-coccygeal muscles. D.S.C., Dorsal sacro-coccygeus. V.S.C., Ventral sacro-coccygeus.

and Amphibians extend throughout the cœlomic cavity, are bodily compressed more and more anteriorly, until finally they become entirely thoracic organs. This change in position, presumably, is to be attributed to the aspiration of the thorax during the reptilian inspiration and to the increasing activity of the abdominal wall during expiration, which, on account of the greater quantity of air inspired, is necessarily amplified in Reptiles, and is therefore of greater intensity than in the terrestrial amphibians—that is to say, greater increments of internal pressure occur during expiration. Similar increase of the internal pressure also occurs during all active movements; for the more intense these become, the more necessary is it for the body wall muscles to contract and give the trunk a certain rigidity; and even during rest they are maintained in tone, and probably play an important part in keeping up a certain amount of pressure upon the splanchnic venous system, and thus serve as an accessory circulatory mechanism. In accordance with this need for an increased internal pressure, varying from time to time with the requirements of the moment and the movement of the animal, we find not only a well-developed abdominal wall and a pelvis structurally much stronger and more firmly attached to the sacrum than in the amphibia, but also a more efficient closure of the pelvic outlet assured by the conspicuous lateral caudo-pelvic muscles, which compress the post-pelvic part of the body cavity and the cloacal passage from side to side. The antero-posterior caudo-pelvic muscles in Iguana clearly serve as a fixatory apparatus for the pelvis and thus form the structural basis for the effectiveness of the contraction of the body wall muscles, a fact which demonstrates the necessity for a tail rigid in the dorso-ventral plane, at least in its proximal part. These antero-posterior caudo-pelvic muscles can scarcely exert much or any pressure upon the cloaca, except perhaps when this is distended by the passage of visceral contents, for their insertion into the pelvis (in Iguana) is lateral and not median. The cloaca, however, is well guarded by the two bow- or crescent-shaped muscles, disposed transversely, the one in front, the other behind; these together form an efficient sphincter for its orifice, which opens on the surface as a transverse slit.

The condition in the Crocodile is essentially similar to that in Iguana. The caudo-pelvic muscles are present, but do not form such fleshy bellies as in Iguana; they appear rather as parts of the superficial tail musculature, the ventral fibres of which converge to be inserted by a small attachment into the pelvis (ischium) much nearer the middle line than in Iguana. Moreover, only one caudo-pelvic muscle is present on each side, a muscle corresponding to the smaller caudo-pelvic muscle of Iguana not being found. They are entirely muscular, and the cloaca passes to the surface between them. They cover an enormous caudo-femoral muscle, which passes outwards over a sling to reach the femur as in Iguana. This sling arises by means of a fascia from the lateral aspect of the proximal part of the tail; it gives rise to muscle fibres, most of which are inserted into the distal extremity of the ischial symphysis, in close relation with, and immediately ventral to, the attachment of the caudo-pelvic muscle; whilst others are inserted into a raphe which extends from the symphysis to the anterior part of the cloaca, which opens as a longitudinal slit just behind the symphysis.

Since the Crocodile presents a more advanced structure than in Iguana—in that the interventricular septum (of the heart) is complete, whilst in other reptiles it remains incomplete—it may be questioned how it is that the caudo pelvic muscles are less differentiated and less prominent than in Iguana. The answer seems to be that their function in part has disappeared, since the pelvis in the Crocodile is completely ankylosed to the spine, whilst in Iguana it is still mobile to some extent. Thus they are no longer required for its fixation, and presumably only exist to prevent the escape of pressure impulses from the pelvis. Moreover, they are attached to the pelvis much nearer the middle line than in Iguana, and they therefore exert more influence over the cloaca, which, however, is provided with sphincter muscles. To this end they are aided by the lateral caudo-pelvic muscles, which correspond with the similar muscles in Iguana.

The condition in the Tortoise is somewhat different from that in Iguana, owing to the fact that the body is encased in a shell, the ventral part of which—the plastron—is united on each side in the region of the "bridge" to the dorsal part—the carapace—either by ligament, as in Emys, or by a suture, as in Testudo, in which, therefore, it is immoveable except for a transverse hinge in its posterior lobe. Elsewhere, the plastron and carapace are united by muscles and the thick leathery skin. The pelvis in each of these species is freely moveable, forwards and backwards, upon the carapace, to which it is attached by the ilia by a hinge joint, its ventral part being free from the plastron.

In Emys—the European Pond Tortoise—the tail is short and slender. Caudo-pelvic muscles are present and, as in Iguana, consist of two distinct muscles on each side (Fig. 7). The more ventral, which in Emys is much the smaller, arises from the mid-line of the tail just behind the cloaca; as it passes forwards it is closely applied to the lateral wall of the cloaca, and is inserted into the posterior margin of the pelvis (ischium) as a flattened horizontal band, its median fibres reaching the middle line and thus adjoining those of the corresponding muscle of the other side. The more dorsal caudo-pelvic muscle, much larger, consists of a thick fleshy band, which arises from the mid-line of the tail in front of the smaller muscle. It passes forwards, its broad surface closely applied to the cloaca, at a higher level than the smaller muscle, and, disappearing into the pelvis, is inserted as a horizontal band into the pubic bone, just in front of the obturator foramen, its insertion extending from just outside the median line to the lower part of the ilium.

On each side of the root of the tail, arising from its lateral aspect, is a sheet of muscle—the lateral caudo-pelvic muscle—the fibres of which pass downwards and forwards and are inserted into the ischial symphysis and into a median raphe which extends distally from this to the anterior limit of the cloaca (Fig. 8). With the similar muscle of the opposite side it encloses the cloacal passage, and covers in the antero-posterior caudo-pelvic muscles, to expose which the lateral caudo-pelvic muscle has to be divided and turned outwards. When this is done the ventral sacro-coccygeus of that side is also disclosed. This arises within the pelvis from the ventral aspect of the carapace; it abuts upon the middle line, its median surface being in apposition with that of the muscle of the opposite side. It passes distally, dorsal to the cloaca and to the outer side of the caudal attachment of the antero-posterior caudo-pelvic muscles, along the ventral aspect of the tail. Laterally, it is related to the lateral caudo-pelvic muscle. Thus the ventral sacro-coccygeus separates the origin of the lateral caudo-pelvic muscle from the origin of the antero-posterior caudo-pelvic muscles—a significant relation in view of the fact that in tail-bearing mammals, such as the dog, the ventral sacro-coccygeus separates the caudal attachment of the ischio-coccygeus from the caudal attachment of those caudo-pelvic muscles which in the mammal are known as the pubo-coccygeus and the ilio-coccygeus. In the Tortoise a dorsal sacro-coccygeus is also present on each side. It arises from the ventral aspect of the carapace, posterior to the pelvis, and passes along the tail, one on each side, dorsal to the origin of the lateral caudo-pelvic muscle; just as the dorsal sacro-coccygeus in the dog, for instance, similarly passes dorsal to the caudal attachment of the ischio-coccygeus in that animal.

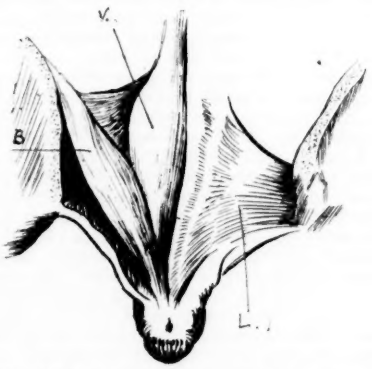
In Testudo the tail is shorter but stouter than in Emys, ceasing just beyond the posterior limit of the cloacal aperture. Instead of two antero-posterior caudo-pelvic muscles on each side, only one is present, which, from its attachments, evidently corresponds with the more dorsal muscle in Emys (Fig. 9). It is a broad, stout, muscular band, and arises from the tail dorsal to the cloaca and anterior to its aperture; as it passes forwards its broad surface is closely applied to the cloacal passage; reaching the pelvis it disappears within and is inserted into the pubic bone in front of the obturator foramen, its innermost fibres reaching the mid-line. Posteriorly, it is related to the caudal attachment of the ventral sacro-coccygeus, the majority of its fibres passing internal to that muscle.

The lateral caudo-pelvic muscle is a broad sheet, much more extensive than in Emys. It arises by a wide origin from all the coccygeal vertebræ, anteriorly from the ventral mid-line, but posteriorly from the transverse processes. From this extensive origin the fibres converge towards the

ischial symphysis, the majority being inserted into it posteriorly by muscle; anteriorly, the attachment of the muscle is continued by an aponeurosis which reaches half way along the pubo-ischial symphysis.

It is unnecessary to go into detail in considering the mode of life of these interesting animals. Just as in Iguana, the necessity for an increased visceral pressure is clearly evident in the Tortoise, in which the act of expiration is performed by the contraction of the body wall musculature. Indeed, the complete surrounding of the visceral mass by muscular sheets and dermal bones, and the complete enclosure of the cloacal passage and occlusion of the pelvic outlet by the muscles attached thereto, leave no doubt in the mind that the mechanism necessary for causing a marked and repeatedly recurring increased visceral pressure is adequately, indeed abundantly, provided for. Whilst the antero-posterior caudo-pelvic muscles, in virtue of the fact that they arise and are inserted into or near the mid-line of the body, can cause a bilateral compression of the cloaca by their simultaneous contraction, the pelvis being fixed (by the body wall muscles), this is also provided for by the remarkable development of the lateral caudo-pelvic muscles, which completely

FIG. 9.



Dissection of Testudo, ventral view. The pubo-ischial symphysis has been divided, and each half of the pelvis widely separated. B, Antero-posterior caudo-pelvic muscle attached to pubis (pelvic inlet). V, Ventral sacro-coccygeus muscle. Both these muscles have been removed on the left side so as to completely display L, the lateral caudo-pelvic muscle.

enclose the cloacal passage as it passes from the pelvic cavity to its exit. This post-pelvic mechanism is sufficient, as an inspection of the dissected animal will convince one, to completely obstruct the escape of pressure impulses caused by a contraction of the body muscles, and by this obstruction to add to the pressure effect. In this connexion it is interesting to reflect upon the increased perfection of the pelvic closing apparatus, which has occurred in Testudo, for it is significant to find that whilst Emys is aquatic Testudo is a terrestrial tortoise, and again the influence of the medium is felt. Whilst the small, more ventral, caudo-pelvic muscle in Emys—in which species it is already a diminutive muscle—has disappeared in Testudo, the other antero-posterior caudo-pelvic muscle (pubo-coccygeus) is much increased; but besides, the lateral caudo-pelvic muscle has greatly developed and ensures more than ever a protection against the escape of pressure impulses from within.

Flexion of tail.—It may be supposed that the antero-posterior caudo-pelvic muscles (pubo-coccygei) of the Tortoise function solely as flexors of the tail; but in face of the shortness of the stumpy tail of Testudo, already flexed by its skeleton so that it cannot be extended, and the comparatively enormous development of its muscles, this can scarcely be maintained. That the muscle may cause a greater flexion of the tail in Testudo than exists during rest is very probable; indeed, by such increased flexion the pelvic outlet may be efficiently occluded—a use the tail is put to in mammals. According to Gadow, Tortoises use their tails for digging holes in the ground into which they lay their eggs. The caudo-pelvic muscles (pubo-coccygei) probably are useful for this and thus act as flexors, since they are attached to the less proximal rather than to the more proximal caudal vertebræ; but, associated with the flexibility of the tail, it is significant to find a pair of new muscles has arisen in the Tortoise—the ventral sacro-coccygei. These, which are not present in the Lacertilia, Crocodilia, nor in Salamander maculosa, presumably are the real tail flexors, for both in Emys and Testudo they are larger than the pubo-coccygei—and in Testudo considerably larger—and, moreover, they pass distally into the tail beyond the attachment of the pubo-coccygei.

Even though it be admitted that the caudo-pelvic muscles may function as flexors of the tail in the Tortoise it is clearly impossible for them to do so in the Lacertilia and Crocodilia, for whilst the tail in all these can be bent laterally with ease and efficiently, in none does flexion, at least of its proximal part, occur—the body is so little elevated from the ground by the shortness of the legs and the tail is so long that this is obvious. The great movement of the tail in these reptiles (Lacertilia, &c.) is its abduction, caused by the conspicuously developed caudo-femoral muscles. In the Lizards it seems as though a tail, rigid in the dorso-ventral plane in its proximal part, is a necessity to allow varying pressure conditions to be produced within the body cavity by giving a firm and fixed origin upon which the caudo-pelvic muscles can contract and thus fix the moveable (reptilian) pelvis. But when the fixation of the pelvis to the vertebral column had occurred the necessity for a rigid tail disappeared, and thus in mammals especially the tail is markedly flexible. In the Tortoise the tail is also flexible, and further, in Emys and in Testudo the pelvis is moveable forwards and backwards upon the carapace. But here we have different conditions, for the production of the variations of visceral pressure, and their purposeful application, do not depend upon fixation of the pelvis, either directly to the spine or indirectly by means of a rigid tail. But besides the contraction of the muscles enclosing the visceral mass (transversalis abdominis, which is attached to the pubic bone), the production of an increased visceral pressure is facilitated by the presence of the plastron. Contraction of the transversalis *plus* contraction of the collective caudo-pelvic muscles will cause an increase of visceral pressure; this will be transmitted forwards towards the anterior limit of this muscular sheet, and will then impinge directly upon the central part of the plastron, against which the visceral mass abuts without the intervention of muscular tissue; and this, being maintained in position by its bony fixation, or by the muscles passing between it and the carapace, will prevent the escape here of pressure and thus lead to the effectiveness of the movement in question.

The existence of the plastron in Emys and Testudo has obviated the necessity for a fixation of the pelvis, for it prevents a spherical form of the visceral mass being caused by the contraction of the inner body musculature and the rotation forwards of the pelvis which the slender and flexible tail of Emys could scarcely prevent. Thus, in these species of Tortoise we have simultaneously a flexible tail and a moveable pelvis, a combination which, as far as I know, exists in no other species of vertebrate.

In conclusion, then, we may say that a study of the anatomical conditions found in the fish, amphibia, and reptiles shows the increasing need for the production of a varying internal visceral pressure, necessary not only for the functioning of the posterior end of the body, but also for the repeatedly recurring act of expiration, and which plays a part of an important accessory circulatory mechanism, and, moreover, occurs incidentally during activity. This necessity has been met by the gradual evolution of the pelvis and of the muscles enclosing the visceral mass, of which muscles those occluding the pelvic outlet plainly form an integral part. The development and segmentation of the antero-posterior and lateral caudo-pelvic muscles is to be attributed to this necessity, for we can only regard their existence as a structural means to meet this demand for an internal pressure—that is to say, they exist for a pressure effect.

LIST OF ANIMALS DISSECTED FOR LECTURE I.

Fish.—Dog-fish (*Scyllium canicula*). Mackerel (*Scomber scombrus*). Herring (*Clupea harrengus*).

Dipnoi.—Mud-fish (*Protopterus annectens*).

Amphibia.—Menobranchus lateralis, s. Necturus maculatus. Salamander (*Salamandra maculosa*).

Reptiles.—Iguana, and several other lizards. Crocodile (*Crocodilus*). Tortoises (*Emys and Testudo*).

A CONTRIBUTION TO THE HISTORY OF INJECTIONS OF SOLUTIONS OF RADIUM.

BY DR. LOUIS WICKHAM,

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AND

M. DEGRAIS,

CHEF DE LABORATOIRE AT THE HÔPITAL ST. LOUIS

(*Translated for* THE LANCET.)

SOME very remarkable investigations were made during the past year by Radcliffe Crocker, Chevrier, Dominici, Jaboin, Petit, and Renon, in reference to the injection of salts of radium, and the subject has been discussed at the recent Congress of Physiotherapy. We have always thought that such researches were of great interest, both scientific and practical, and for this reason we have made various experiments directed to this end ever since the establishment of the Radium Laboratory in 1906. At that time nothing seemed to have been published on this subject, at least in France, except an important work by Bouchard, Curie, and Balthazar (Congress of Medicine held at Lisbon in April, 1906). This communication might be summarised as follows.

"When introduced into the animal body the emanation diffuses itself throughout the structures and may in this manner reach deep-seated parts. It has a predilection for the glands which form an internal secretion, and especially for the suprarenal capsules. It is eliminated by the lungs and the skin, and to a small extent by the kidneys."

We wish in this short communication to supply some details of our own experiments, as well as of the observations which they have suggested to us. In a case of lupus vulgaris of the neck a curative change was produced by injections of either (1) water rendered radio-active[1] (radio-activated water) in the proportion of one milligramme of pure sulphate of radium per litre, or (2) water impregnated with radium (radiferous water) in the proportion of one milligramme of pure bromide of radium per litre. In this case 40 injections of each kind (and of one to two cubic centimetres) were given in the course of two months. We said at the time that a new path of investigation was thereby opened up, a path which gave a promise of important therapeutic results because the radio-active energy could be made to penetrate all parts of the body. The patient was shown at a meeting of the Dermatological Society in November, 1906. Another case of lupus, but of the fixed erythematous type, which had been treated by injections of radium from Nov. 2nd to 14th, 1906, was also shown at a later meeting of the same society.

For purposes of comparison we treated in this case the lesions of lupus on the left side by the application of radium apparatus and the lesions on the right side by injections, the results being as follows. On the left side there was sharp reaction, with destruction of the lupus and a subsequent process of repair. On Jan. 16th, 1906, the cicatrix had a very good appearance and seemed to be strong, but on June 22nd, 1907, there was recurrence of the disease at the margin of the tissues of repair. On the right cheek, the side on which injections had been given, there was no visible inflammatory reaction, but there was first a diminution and then a disappearance of the erythema of the lupus, the part assuming a whitish cicatricial aspect. On June 22nd, 1907, when we found the recurrence on the left side, the condition of recovery on the right side was maintained, and there has been no reappearance of lupus there since that time. As we have said in our "Traité de Radiumthérapie," pp. 11, 96, and 275, this was an interesting observation, inasmuch as it seemed to show the superiority of the injections, but the result will be of value only if it is confirmed by other facts of the same kind.

[1] It is well known that the gaseous emanation which escapes from radium at the same time as the rays has the property of conferring some of the properties of radium on the various media with which it comes in contact. These media are thereby rendered radio-active (by *induced* radio-activity), but only for a time, because the properties in question are merely borrowed. For example, insoluble sulphate of radium kept for a time in vaseline or in water renders them radio-active, so that after the removal of the radium salt the vaseline continues to be phosphorescent and the water to be radio-active.

In the preceding cases the doses of radium were extremely small, but they contained the *emanation*, an element which is not present in the rays emitted by the radium apparatus. This emanation is endued with an energy which possesses evident bactericidal properties, as we showed in 1906 in our researches on the action of solutions of radium on cultures of the gonococcus and staphylococcus.[2] The injection of certain insoluble salts of radium suspended in an emulsion into structures of small absorbent power prolongs the contact of the salt with the diseased tissues and intensifies the action of the radiations and of the emanation. In June, 1909, when a large cancerous nodule of the breast was to be treated we endeavoured to put this idea into execution as follows. On our request M. Jaboin, the chemist of our Radium Laboratory, whom we have to thank for preparing these liquids (and to whom, as well as to M. Baudoin, we are indebted for the radio-active analysis of urines to be mentioned presently), made for us an emulsion of radium in a mixture of paraffin and vaseline. Our object was to inject this preparation beneath the nodule so as to form a stratum underlying the whole of the diseased part. When this was done we applied radium apparatus above the nodule so that the latter had the paraffin on its underside and the radium apparatus above, being thereby exposed to a cross-fire to which, for various reasons, we attach importance. The nodule diminished in size and disappeared rapidly; there was no ulceration and there has been no recurrence. This isolated case is not conclusive, but it represents a new technique and a new application of the method of injections.

It may be interesting to know the manner in which the organism behaves towards solutions containing soluble salts of radium (*solutions radifères*). The following observations were made on a series of 30 patients in the wards of one of us (Dr. Wickham) in the Hôpital St. Lazare at the beginning of the year 1908. The solutions that were used consisted of grey oil made with 20 per cent. of mercury and containing a radium salt to the amount of 0·0005 of a milligramme or half a microgramme,[3] according to the accepted unit of quantity. The syphilitic patients received the series of injections in accordance with the ordinary method of mercurial treatment and did not experience any inconvenience. The series consisted of six injections of seven drops each every five days. The analysis of the urines which was made for us led to the following results. After injections of grey oil containing radium (*radifère*) the urine is radio-active during the first three or four days, and its radio-activity decreases with some regularity during that period, a result which agrees sufficiently well with the law of decrease of induced radio-activity. It must be understood that soluble radium when injected is in the free state in the animal body, and carries with it its gaseous emanation which gives rise to the phenomena of radio-activity. The emanation is only emitted when the salt is in the free state; the salt in a radium apparatus does not supply emanation for therapeutic purposes, for this gas does not pass through any solid body, being in this respect unlike the extremely penetrating radium rays. When after some days the mercury begins to appear in the urine the latter no longer shows radio-activity.

We may mention that we have treated some very anæmic patients suffering from cancer with a series of five injections of soluble salts of radium to the amount of 10 microgrammes per injection. The results have not been without interest, the red globules increasing in number, but the cases are too recent to justify the drawing of definite inferences. These injections were perfectly supported.

In conclusion, we think that these studies have a great interest and ought to be seriously taken in hand.

[2] Wickham: Annales de Dermatologie, October, 1906.

[3] One microgramme represents the thousandth part of one milligramme.

LITERARY INTELLIGENCE.—Messrs. Shaw and Sons of Fetter-lane, London, are publishing a large work entitled "The Diseases of Infants and Children," by Dr. Edmund Cautley, senior physician to the Belgrave Hospital for Children, London. It consists of 1040 closely printed pages, and the price is 27*s.* 6*d.* net. The same firm is calling attention to a new edition of a book published by them last year, entitled "Symptoms and their Interpretation," by Dr. James Mackenzie. This book we favourably reviewed in THE LANCET of Sept. 4th, 1909.

THE SYSTEMATIC INVESTIGATION OF CHRONIC AFFECTIONS OF THE STOMACH AND INTESTINES.

BY GEORGE HERSCHELL, M.D. LOND.

IT is a peculiarity of diseases of the stomach and intestines that from a study of the symptoms alone we are only able to divide them into groups the members of which, although apparently similar, depend upon widely differing conditions. The differentiation between these cannot in most instances be made by the ordinary methods of physical examination such as palpation, auscultation, and percussion. We shall require in most cases data which can only be acquired by other and more thorough methods of investigation.

It is doubtless true that we can often make a shrewd guess as to the real state of affairs by a careful study of the evolution of the disease and of the symptoms actually present; and this probability may be strengthened by the presence or absence of local tenderness, rigidity, tumour, or other signs which we may discover by a manual examination of the abdomen. But to make a real diagnosis with any degree of certainty we require additional information which can only be obtained by an examination of the stomach contents, stools, or urine.

It must, nevertheless, be understood very distinctly that it is not my intention to under-estimate the information to be derived from the anamnesis—i.e., the scientific questioning of the patient as to his previous history, the evolution of the disease, and the character of the symptoms. On the contrary, nothing can be of greater value as establishing the probability of the nature of the affection from which the patient is suffering. But we establish probabilities only, and the tentative conclusion at which we arrive requires to be confirmed by observed facts before it can aspire to the dignity of a diagnosis or definite opinion as to the nature of the disease. It is quite true that in cases of moderate severity and short duration we may be satisfied with such a tentative opinion, which may be confirmed by the happy result of treatment based upon the assumption. It is, unfortunately, also the fact that in daily practice such an assumption is frequently all that we are able to obtain, whether from the unwillingness or the inability of the patient to undergo a proper examination, and we have to do the best we can with it. But in all cases which are prolonged and resist treatment based upon the hypothesis which we have made, all cases accompanied by loss of flesh which cannot be accounted for by restriction of diet, all cases evidently progressive, and all gastric affections of any duration which occur in middle-aged persons of good previous health, it is our duty to impress upon the patient the absolute necessity for permitting a thorough investigation to be made. We must ever bear in mind that cancer of the stomach is the most frequent form of cancer, and that any dyspepsia which occurs in a man at the cancer age is very probably malignant. In fact, we may take it as a general working rule that any dyspepsia of severity accompanied by loss of appetite in a man between 40 and 60 is due to some serious organic lesion and that no sacrifice of time or convenience can be too great to have the matter settled before it is too late.

The aim of the present paper is to present to the physician who has acquired all the information possible from the anamnesis and the examination of the patient in his consulting room the additional data which modern methods enable him to obtain, and to critically discuss their value from a diagnostic standpoint.

We are able to ascertain the following facts: the length of time taken by the food to traverse the alimentary tract before it is expelled from the body; whether the fasting stomach is empty or contains substances which may afford us diagnostic information; to what extent digestion takes place in the stomach and how long food remains there; whether the pancreatic and biliary secretions are normal; whether there is evidence of chronic pancreatitis or of any affection of the bile-ducts; the presence of catarrh or abnormal putrefactive processes in the intestine; and whether there is bleeding into any part of the gastro-intestinal tract. These are the ordinary points upon which it is often necessary to be informed, and one or more of them may give us the additional data which we require to elucidate the case under consideration. Under conditions of especial difficulty we may not only have to put the patient through the whole series of tests but also to make use of the Roentgen ray, sigmoidoscope, gastroscope, examine the blood, or employ Salomon's test for malignant ulceration of the stomach.

I propose to discuss these points *seriatim* and to point out very briefly what we may learn from their investigations.

A.—The Time taken by the Food to Traverse the Gastro-intestinal Canal.

This may be estimated either by following the shadow of a bismuth meal upon the radiographic screen or by administering a dose of some inert colouring matter, such as carmine or vegetable charcoal, and observing when it appears in the stools. The radiographic method is unfortunately only at the disposal of those medical men who, living in large centres, have access to a properly equipped radiographic laboratory and to whose patients the question of expense is not important; or to the fewer number who have an installation in their house and the technical knowledge to use it efficiently. The charcoal or carmine capsule, besides being of universal application, will often reveal much more than the Roentgen rays, and must eventually be used in many cases.

Surprisingly little study has been accorded in this country by diagnosticians to the actual time taken by the food to pass through the alimentary canal, considering that its clinical importance is just as great as the daily number of stools. For instance, it is not at all unusual for a patient to have one stool a day and in consequence consider the bowels to be regular, whilst all the time there is a latent constipation with retention of fæcal matter, giving rise to chronic ill-health from auto-intoxication.

(*a*) In cases of diarrhœa the passage of the charcoal in the normal time would tend to show that the peristalsis in the small intestine was not increased and that the disturbance was in the lower portion of the large intestine.

(*b*) In diarrhœa the quick appearance of the charcoal or carmine in the stools would suggest that the trouble was in the small intestine or ascending colon.

(*c*) In a patient who has daily motions a dose of charcoal given at breakfast should appear in the next morning's stool. If it fails to do so there is latent constipation. If after the stool lavage of the sigmoid brings away black fæces there is retention in the lower bowel. If it does not do so the delay is in the cæcum, ascending, or transverse colon.

(*d*) In a patient who does not have a daily motion the removal of black fæces by lavage of the sigmoid on the morning following the administration of the cachet would show that atony or dilatation of the lower bowel was an important factor in the production of constipation.

(*e*) Appearance of black stools for several days after the administration of a dose of charcoal will point to atony of the bowel and latent constipation.

(*f*) By administering a dose of charcoal or carmine at the commencement of a test intestinal diet, we are able to mark off the moment when it commences to appear in the stools, and when we may safely use them for purposes of examination.

(*g*) We may mark off and obtain the total fæces corresponding to a test diet extending over a fixed period by giving a carmine cachet at its commencement and termination (provided that there is no latent constipation).

B.—The Examination of the Fasting Stomach.

This is especially useful as a first step in the investigation of cases in which there is a suspicion of serious disease. Not only shall we obtain valuable information as to the motor functions of the stomach, but even possibly special indications which the chemical examination of a test meal cannot afford.

With respect to the results obtained by this examination, we may divide our cases into four groups: the stomach may be empty; it may contain neutral or alkaline contents; it may contain hydrochloric acid; or there may be present lactic or organic acids. Each of the last three groups may be again subdivided into those which contain food residues and those which do not.

1. *The stomach is empty.*—We are justified in arriving at the following deductions. (*a*) There is no considerable motor insufficiency of the stomach, as we know that the

stomach is able to empty itself in 12 hours. In order to ascertain whether a lesser degree of loss of motility is present we must examine the stomach six hours after a mixed meal. We can thus practically exclude pyloric or duodenal stenosis. (*b*) We can exclude permanent hypersecretion of gastric juice, and thereby probably gastric duodenal ulcer. Consequently, any excess of HCl which we may find in our subsequent investigation must be alimentary—that is, limited to the digestive period. (*c*) We can probably exclude cancer of the stomach.

2. *The fasting stomach contains a small quantity of neutral or alkaline fluid with or without pus, blood, or infusoria.*—(*a*) A simple neutral or alkaline fluid containing epithelium and a few leucocytes would suggest achylia gastrica or chronic gastritis. (*b*) If pus and blood are present and if we can exclude phlegmonous gastritis (an affection of great rarity) and pus from the mouth, tonsils, post-nasal space, or bronchi there is in all probability an ulcerating cancer of the stomach. There must, of course, be an ulcerating surface to produce the pus or blood, and a non-malignant ulcer would hardly be found except in association with hydrochloric acid. (*c*) The presence of infusoria in addition would make our diagnosis practically certain, and we should also be in a position to say that the cancer was situated upon the wall of the stomach and not at one of the orifices. Two varieties of protozoa are found in the stomach—the *trichomonas hominis* and the *megastoma entericum*—when the four conditions are present which are necessary for their existence. These are absence of HCl, an alkaline reaction, pouches or folds in the gastric mucosa, and absence of fermenting food residues. These conditions are only present in interostial carcinoma of the stomach.

3. *The stomach contains hydrochloric acid.*—There may be no remnants of food or macroscopic or microscopic food residues.

(*a*) There are no food residues. If the hydrochloric acid is small in amount and only occasional the stomach is probably normal, as the secretion may be quite accidental and due to some temporary irritation or psychic excitation of the gastric glands. If the hydrochloric acid is invariably present or in larger amounts there is hypersecretion of gastric juice. Such a condition may be rarely a neurosis, or more probably due to ulcer of the duodenum or the irritation of gall-stones or of a diseased appendix.

(*b*) Hydrochloric acid with macroscopic food residues nearly always denotes an ulcer of the stomach or duodenum which has produced some amount of pyloric stenosis.

(*c*) Hydrochloric acid with microscopic food residues. Whenever hydrochloric acid is found in the fasting stomach the problem is to say whether we have to do with a simple hypersecretion of central or reflex origin or one due to the local irritation of retained food residues. The absence of macroscopic food residues is far from being conclusive that food is not retained abnormally in the stomach. Sarcinæ and yeast cells in chains or budding are in themselves strong presumptive evidence of food stagnation. If in addition we find muscle fibres, starch granules, fat globules, or crystals we can be certain that there are food residues retained in the folds and rugæ of the stomach, possibly slight in amount, yet sufficient to set up hypersecretion. Sarcinæ are practically never found in the stomach unless there is hydrochloric acid, and denote either benign stenosis of the pylorus or a carcinomatous ulcer in the early stage before the secondary gastritis has made much progress. As the atrophic changes develop in cases of cancer there will be observed a gradual diminution in the hydrochloric acid and sarcinæ with a proportionate appearance of the long bacillus and lactic acid. Consequently, if we find both degenerated sarcinæ together with the long bacillus we may deduce that the cancerous process is a rapid one. As sarcinæ require some time to grow their absence does not exclude stagnation of short duration.

4. *We find food residues with the presence of lactic acid and possibly the Oppler-Boas or long bacillus.*—A practised observer can usually tell as soon as he looks through the microscope whether the gastric stagnation is associated with the presence of lactic or of hydrochloric acid respectively. In both cases you will see the same changes in the muscle fibres, in both you will often find yeast cells in chains, but if lactic acid be present the protoplasm of the leucocytes will be shrunken and granular, the cells still retaining a faint definite outline; if HCl is present the leucocytes will be entirely digested, leaving only centrally grouped nuclei. Also with lactic acid you may find the long bacillus, with HCl sarcinæ, and hardly ever the reverse.

It is important to bear in mind that the long bacillus is not diagnostic of malignant disease, but merely signifies food stagnation with absence of hydrochloric acid and presence of lactic acid. Recent work appears to point to the fact that the long bacillus is only suggestive of malignant disease when accompanied by a considerable amount of lactic acid. The reason is that whilst with ordinary albumins these bacilli form little acid, they find in the cancer albumins thrown off as the result of ulceration a medium which enables them to do so in large quantities. It is obvious, therefore, that the long bacillus associated with large amounts of lactic acid will point to malignant disease which has ulcerated. The long bacilli, which, according to Heineman and Hefferan, are identical with the Bulgarian bacillus, when present in large numbers frequently pass into the intestines and may be recovered from the stools by the same technique.[1]

Macroscopic food residues show us that the stomach is unable to empty itself during the night and signify some obstruction in the pylorus or duodenum. The association of lactic acid points to its probably being of a malignant nature.

If the food residues are microscopic it is probable that we have a cancer infiltrating a small portion of the wall of the stomach. The immediate effect of this is a local loss of motility, which will increase *pari passu* with the extension of the affected area. At last a stage will be reached when the movements of that part of the stomach wall are not sufficient to dislodge the mucus with which it is covered, and food particles will lodge in the rugæ and on the surface.

C.—Digestion in the Stomach.

We should in all cases ascertain to the best of our ability the degree of gastric digestion, as even in affections apparently confined to the intestines the trouble may have a gastric origin. Indirectly we may infer an abnormality of gastric digestion when we find connective tissue remains in the stools, but the most satisfactory way of finding out what we require is by the direct examination of the stomach contents after a test meal.

The points which should receive our attention are:—

1. *The presence of an abnormal amount of mucus.*—This is a certain indication of chronic gastritis.

2. *The HCl content of the gastric juice.*—(*a*) If normal there may be respectively a normal stomach, simple atony of the stomach of insufficient severity to lead to retention of food residues, pyloric stenosis not sufficient to delay materially the emptying of the stomach, or a pure neurosis. (*b*) Increase of HCl acidity. We may have nervous hyperchlorhydria, acid gastritis, a gastric or duodenal ulcer, a gall-stone, or a latent appendicitis. (*c*) Diminution of HCl. This may result from a general condition, such as neurasthenia or anæmia, from a chronic gastritis, or from malignant disease of the stomach. (*d*) Absence of HCl. This is always a most important symptom. Rarely a neurosis, it practically always denotes either the terminal stage of a chronic gastritis or atrophy of the secreting glands either of benign or malignant origin.

3. *Digestion of starch.*—As a general rule the extent to which starch digestion is carried out in the stomach may be taken as a confirmation of our findings as to the amount of free HCl, being in inverse ratio to it. The chief practical use of ascertaining whether starch is digested in the stomach is to guide us in the selection of a suitable diet.

4. *The secretion of the gastric ferments.*—The estimation of the pepsin and rennin has at present very little value for diagnostic purposes, as they usually follow pretty closely the amount of HCl secretion.

A rough estimation as to the efficiency generally of proteid digestion in the stomach may be made without passing a stomach tube by a simple examination of the stools. It appears that collagen, the basis of connective tissue, is not acted upon by the pancreatic juice unless it had been previously cooked or exposed to the action of HCl. It follows therefore that if we administer to a patient connective tissue which is practically uncooked and find it reappear in the stools, we may be certain that there must be a defect in the

[1] See author's work, Soured Milk and Pure Cultures of Lactic Acid Bacilli in the Treatment of Disease. London. 1910.

amount of HCl secretion in the stomach. That is, of course, that we take care to give only such an amount as should in the ordinary way be efficiently dealt with by a healthy stomach. This is approximately the amount contained in 100 grammes of beef. If the beef is passed through a mincing machine, made into a cake and fried lightly on both sides in butter, so that the middle is still quite pink in colour, the connective tissue will be raw enough for our purpose.

D.—Evidence of Functional Hepatic Insufficiency and of Disease of the Biliary Ducts.

It is probable that a pathological excess of urobilin in the urine always means either: (*a*) functional hepatic insufficiency; (*b*) some obstruction to the free flow of bile into the intestine; or (*c*) auto-hæmolysis.

The chief clinical sign of hepatic insufficiency is diminution in the amount of urea excreted in the urine, in conjunction with increase in ammonia, uric acid, and purin bodies, and the presence in severe cases of leucin and tyrosin. But in order that the amount of urea may have any diagnostic significance it is necessary to make sure that it is not due simply to deficient ingestion of nitrogen-containing food. This could, of course, be done by estimating the nitrogen content of the diet of the patient, but in practice we secure the same results by the far simpler method of taking into account not the absolute amount of urea excreted in a day, but the relation between it and the total amount of urinary nitrogen. "Any lowering of the ratio of urea to urinary nitrogen below 83 per cent. is a sign of hepatic insufficiency."[2]

Interference with the free passage of bile into the intestine, such as is met with in chronic disease of the bile ducts or in gall-stone disease, is characterised by: (*a*) the same defective utilisation of fats as is met with in deficient secretion of the pancreas but to a lesser degree; (*b*) deficiency in the colouring matter in the fæces; and (*c*) the presence in the urine of urobilin and bile pigment.

The presence of traces of bile in the urine is of greater diagnostic importance than is commonly supposed. Harry Adler[3] has noted the fact that in many cases of obscure abdominal pain, in which gall-stones and chronic cholangitis were subsequently demonstrated by operation, he was struck by the fact that almost invariably traces of bile could be demonstrated in the urine by Rosin's test. (A green ring formed at the junction of the urine and a weak alcoholic solution of iodine.)

Cammidge and Robson[4] state that bile pigment could be detected in the urine in 62 per cent. of cases of chronic pancreatitis associated with cholelithiasis and in only 16 per cent. of those in which no biliary calculi could be found in the common duct at the time of operation. Pathological excess of urobilin also appears, according to these observers, to denote some degree of obstruction to the free passage of bile into the intestine. The combination of both bile pigment and urobilin renders the existence of some degree of obstruction in the common duct practically certain.

One can distinguish between hæmatogenous and hepatogenous urobilinuria by the fact that in fresh urine urobilin is present, not as such but as a urobiligen, which oxidises into urobilin under the influence of light. In urobilin derived from hæmolysis the reaction will be obtained very soon after the urine has been passed, whilst in that resulting from the interference with the passage of bile into the intestine not until one or two days afterwards. We shall have, of course, in the former some degree of anæmia.

E.—Defect in the Pancreatic Secretion.

This can be ascertained from the examination of the stools after a test meal by finding:—

1. *Undigested muscle fibre.*—100 grammes of meat taken during the day by a healthy person should be entirely digested and absorbed, and no remnants, either macroscopic or microscopic, should be discoverable in the stools in an undigested condition. From numerous experiments it has been proved that muscle fibre is never completely digested in the stomach. The appearance of muscular fibres which have not lost their striation in the stools must point conclusively to defect in the proteid digestion in the intestine, and necessarily implies that the pancreatic secretion is deficient.

2. *Alteration in the utilisation of fat.*—(*a*) Excess of saponified over unsaponified fat in the fæces may point to increased activity of the pancreatic secretion, and is frequently met with in hyperchlorhydria as the direct result of the excess of free HCl, the natural activator of the pancreas. Such an excess of pancreatic secretion is, I am sure, exceedingly common as the pancreatic catarrh which forms the first stage of chronic pancreatitis. Excess of saponified fat may also be due to the action of bacteria, and points to abnormal putrefactive processes in the upper part of the intestine. When this is the case there will be invariably other evidences of putrefactive processes in the intestine, such as indicanuria, and the usual syndrome of auto-intoxication. There will also naturally be evidence of defective pancreatic secretion, such as the presence of undigested muscular fibre and the positive result of the tryptic insufficiency test, and we shall, under these circumstances, be justified in assuming that the excess of saponified fat means intestinal catarrh.

(*b*) Diminution of saponified fats. This will point to some degenerative change of the pancreas, is often met with in the later chronic stage of intestinal indigestion, and in conjunction with the pancreatic C reaction will suggest cirrhotic changes in the pancreas due to long-standing chronic inflammation.

(*c*) Excess of unabsorbed fat. This will show that there is some interference with the functions of the pancreas, provided that we can exclude defective gastric digestion, biliary obstruction, and an excess of fats in the food, especially those, such as mutton fat, having a high melting point.

3. *Tryptic insufficiency test.*—Of all the methods which have been devised for measuring the functional activity of the pancreas, the most certain and direct is that which consists of determining the presence of trypsin in the fæces. It is a well-known fact that a certain proportion of the trypsin of the pancreatic juice is not used up in the duodenum, and may be found in the stools. Nature is not parsimonious, and habitually supplies an excess of digestive fluids over the amount actually required. It follows, therefore, that if we can demonstrate the presence of trypsin in the fæces there must be enough and to spare of pancreatic juice secreted, and there can be nothing very wrong with the pancreas in the direction of functional failure. If we find a relative excess of trypsin in the fæces we have strongly suggested a condition of catarrhal hypersecretion of the pancreas, such as is met with in the first stage of chronic pancreatitis. If, on the other hand, we find diminution or absence of the tryptic ferment in the stools, we may assume that there is some affection of that organ which materially interferes with its secretion.

The best method at present at our disposal for estimating the amount of trypsin present in the stools appears to be that devised by Gross,[5] which is based upon the time taken by an aqueous extract of a given quantity of fæces to digest a standard weight of casein. To secure the best results it is important that the patient should be at the time upon a diet consisting mainly of proteids, this having been shown to produce the largest output of trypsin in a healthy person. Normally, 10 cubic centimetres of a 1 in 3 suspension of fæces should digest three-quarters of a grain of casein in from 12 to 14 hours. In abnormal conditions the time may be much reduced or extended. One ascertains the moment when all the casein is digested by failure to obtain a precipitate with acetic acid.

F.—Evidence of Chronic Pancreatitis.

It is now quite certain that chronic pancreatitis is a much commoner affection than has hitherto been imagined, and that it explains the pathology of a certain proportion of obscure gastro-intestinal disturbances. In many cases of chronic pancreatitis, especially when resulting from infective extension from a duodenal catarrh, there may be no pain or jaundice, but merely a dyspepsia of the atonic type with flatulence as a prominent symptom. It is consequently necessary to definitely exclude pancreatitis before assuming the presence of an uncomplicated gastric catarrh, it being morally certain that many cases of so-called gastric catarrh remain uncured by treatment because they are in reality chronic pancreatitis.

[2] Combe: L'Autointoxication, p. 283.
[3] Medical Record, Oct. 9th, 1909.
[4] The Pancreas: Its Surgery and Pathology. London. 1907.
[5] Deutsche Medicinische Wochenschrift, p. 796, vol. xxxvi.

Again, as I have pointed out elsewhere,[6] the presence of chronic pancreatitis probably has considerable diagnostic value in the recognition of duodenal ulcer, as if gall-stones can be excluded a local source of irritation in the duodenum is suggested. This, in the presence of rigidity of the recti muscles, hunger pain, or abdominal tenderness, may give the casting vote against a hyperchlorhydria of functional origin.

For the recognition of chronic pancreatitis we rely mainly upon the Cammidge C reaction[7] in conjunction with the other signs of abnormality in the pancreatic juice already mentioned. According to Cammidge and Robson, the presence of crystals of oxalate of calcium in the urine are strongly confirmatory of chronic pancreatitis, having been found in 73 per cent. of all cases examined. They do not appear to occur in acute pancreatitis, and very rarely in malignant disease of that organ.

G.—Signs of Abnormal Putrefactive Processes in the Intestine.

We cannot prescribe intelligently for any case of neurasthenia, intestinal dyspepsia, or diarrhœa unless we know whether or not there are abnormal putrefactive processes in the intestine.

The signs upon which we found our opinion are *urinary* (excess of indican, excess of conjugate sulphates, and the presence of phenols and their congeners) and *fæcal* (the excess of Gram-positive over Gram-negative forms in stained cover-glass preparations, alkalinity of reaction, excess of anaerobic bacteria, and abnormal fermentation in Strasburger's tubes).

H.—Signs of Intestinal Catarrh.

The diagnosis of intestinal catarrh is made chiefly from the demonstration of mucus and an increased amount of inorganic ash in the fæces.

Mucus in the fæces must always be considered as pathological, and to denote either a functional disturbance of secretion or more frequently an anatomical disease. We are enabled to deduce from the appearance of the mucus and the way in which it is mixed with the fæcal matter the part of the intestine from which it comes. Pure mucus without any admixture of fæces denotes catarrh of the rectus, sigmoid, or lowest part of the descending colon. Fæcal masses covered exteriorly by a thin layer of mucus point to constipation, fæcal retention, and irritation, and consequent catarrh of the lower bowel. Mucus, whether macroscopic or microscopic, if intimately mixed with fæces, suggests catarrh of the upper colon or of the small intestine. If the flakes of mucus are either bile-stained or become green when acted upon by a strong aqueous solution of corrosive sublimate, it may be considered practically certain that they come from the small intestine.

The amount of inorganic ash in the fæces varies normally between 10 and 15 per cent. It is increased in catarrhal inflammation of the intestine, and this increase is greater the nearer the lesion is to the anus. A large or considerable excess of inorganic ash renders the diagnosis of chronic colitis practically certain and is a valuable confirmation of other signs.

I.—Evidence of Bleeding into Any Part of the Gastro-intestinal Canal.

One of the most marked features of the last two or three years has been the improvement in the technique for detecting minute amounts of blood in the fæces (occult blood), and our tests are now quite delicate enough for all practical purposes. As regards the significance of the finding, observers are mostly agreed that a negative result of the test is much more valuable from a diagnostic point of view than a positive one. For instance, in the absence of hydrochloric acid in the stomach contents with no retention of food, the continued absence of occult blood in the stools would go far to negative the suggestion of a gastric carcinoma.

The information to be obtained from the presence of occult blood in the stools, the patient being on a hæmoglobin-free diet, may be briefly stated as follows:—1. The constant presence of occult blood strongly suggests malignant disease of the stomach or intestines. 2. Intermittent presence suggests a gastric or duodenal ulcer. 3. Appearance of occult blood in the stools of a patient who has been apparently cured of an ulcer of the stomach or duodenum strongly points to an impending relapse. As Boas has wisely suggested, all cases of cured ulcer should have periodical examinations of the stools for occult blood for some months until the continued absence of blood shows complete healing. 4. The test for occult blood is of extreme value to us during the medicinal treatment of stomach or duodenum, to tell us when it is safe to make any improvement of the diet. Should occult blood appear at any time after an increase of food has been given the patient it will show that the change has been prematurely made and we must try back for a little.

In any case the appearance of occult blood in the stools points out that there is some bleeding going on in the gastro-intestinal tract, and indicates the absolute necessity for a thorough examination and investigation of the patient.

I hope that by this time it is quite plain, first of all, that a real diagnosis of a case of disturbance of the stomach or intestines can only be made by a study extending over several days, and that an opinion arrived at in any other manner must be a pure guess, possibly correct, but still only a guess. Secondly, that there is no need to despair if, after having asked his patient the usual questions and palpated the abdomen, one is not able to say definitely anything more than that the patient has "indigestion." I hope that I have succeeded in showing that there are still methods to be tried before the physician is justified in treating the case by the method of trial and error or sending it to the surgeon. It only remains to consider the best method of putting the patient through the different tests.

The first difficulty is usually with the patient himself. He would be perfectly satisfied with a diagnosis such as "acid dyspepsia," and it is difficult to make him understand that it is not a diagnosis at all, but simply a statement in other words of what he knows already. And he naturally cannot understand why, if a diagnosis of a disease of heart or lungs can be made at once in the consulting-room, those of the digestive system should require further investigation and be in a different category. His natural tendency is to lose confidence and to go to someone else who will diagnose "acid dyspepsia" or "constipation" or something similarly meaningless, and not put him to the trouble or expense of further investigation.

But assuming that the patient really wishes to get well and is willing to take some trouble to do so, how shall the tests best be carried out?

The very first thing is to decide which tests are necessary in the particular case under investigation, as it may not be necessary to go through the formidable list which I have enumerated. In many cases there may be just one or two things which we require to ascertain to clench the diagnosis; and it frequently happens that it is not necessary to pass a tube into the stomach of the patient, as we may obtain all the additional data which we must have from the examination of the stools and urine. In any case it is as well to commence the investigation by a thorough analysis of these, as we cannot fail to acquire an immense amount of definite information as to the condition of the gastric and duodenal digestions, the condition of the pancreas, and the presence or absence of intestinal catarrh, information which will safely guide us as to the extent and nature of the further investigations required for the elucidation of the case.

The next point is to make arrangements for obtaining the facilities necessary for the efficient performance of the tests. Even in a case in which the investigation is limited to the examination of the stools and urine we shall require: (*a*) the collection and measurement of the 24 hours urine; (*b*) the daily collection of the fæces, and opportunities of inspecting and microscopically examining them in a fresh condition, separating the carmine-coloured portions; (*c*) a period during which the patient is upon a test diet containing measured amounts of meat, bread, milk, potatoes, &c.; and (*d*) a second period during which all hæmoglobin is excluded from the patient's diet in order that the stools may be examined for occult blood.

To attempt such an investigation in the patient's home is almost impossible; it would necessitate a very large amount of detailed instruction on the part of the medical man, as the work would have to be carried out either by the untrained

[6] The Diagnosis of Duodenal Ulcer, with Special Reference to the Pancreatic Reaction, Clinical Journal, Jan. 12th, 1910.
[7] The Pancreas, its Surgery and Pathology, by Mayo Robson and Cammidge, London, 1907, p. 252.

friends of the patient or by hired nurses who would be probably equally unversed in the minutiæ of the diets and methods. The preparation of the test diets not only requires scales and weights, but necessitates an alteration in the usual household arrangements, and throws a certain amount of extra work upon often unwilling domestics. Besides, the medical attendant will have to pay visits at unusual and inconvenient hours, such as before breakfast. The collection of stools and urine is not by any means a task which will be undertaken with alacrity by ordinary servants.

Taking all these facts into consideration, it is far better for the patient to enter a nursing home for a week, into which space of time the necessary tests can usually be compressed. Here the preparation of the different test meals, the administration of the enemas, the collection and preservation of the stools, are part of the daily routine and are carried out as a matter of course, and the medical man can visit early or late without upsetting or inconveniencing anybody.

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MATERNITY CASES IN THE LIVERPOOL WORKHOUSE HOSPITAL DURING 1907, 1908, AND 1909.

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IN THE LANCET of April 6th, 1907, p. 940, there is a report upon the maternity wards of the Liverpool Workhouse Hospital for 1906. The present communication is a similar report for the years 1907, 1908, and 1909.

Total number of women admitted, 1330; married, 761; single, 569; primiparæ, 455. Residing in the workhouse for variable times before confinement, 382; admitted direct from town when in labour, 926; admitted from the workhouse lock ward, 22.

Of *maternal mortality* there were six cases, details of each of which are here given in condensed form.

1. *Case 163, 1909.*—Aged 40; 12-para; admitted in labour suffering from vomiting and albuminuria. Confinement natural. Baby premature and stillborn. Vomiting persistent after labour. Suppression of urine set in gradually and continued until death, six days after. Post-mortem examination: Kidneys much congested and large, pelvis normal, increase of fluid in pericardium, and general œdema.
2. *Case 350, 1909.*—Age 36; 5-para. Normal labour Sept. 15th. Albumin in urine. Chest tubercular. Patient sent to the medical wards, where she died from uncomplicated phthisis on Oct. 9th. No post-mortem examination allowed.
3. *Case 90, 1908.*—Age 29; 4-para. Admitted with a temperature of 101·8° F. Pleuro-pneumonia diagnosed. Double pneumonia supervened and the patient died seven days after from that disease. A post-mortem examination verified the diagnosis. Pelvis healthy.
4. *Case 172, 1907.*—Age 21. Patient admitted from the medical wards in a state of collapse, with constant vomiting for three days previous to admission. She did not rally, but died next day from syncope and signs of œdema of the lungs. No post-mortem examination.
5. *Case 289, 1907.*—Age 26. Patient admitted in labour. Had had no food for ten days before admission. Powerless labour, forceps applied. Died from sepsis. Abscess found in broad ligaments, pus in uterus, probably previous pyosalpinx.
6. *Case 594, 1907.*—Age 22. Labour quite normal. Seven hours afterwards eclampsia set in and patient died in 28 hours, no remedies having the slightest effect on the course of the disease. A necropsy showed œdema of the lungs and cerebral congestion.

The above are all the deaths from every cause of every woman who was admitted to the maternity wards during these years, and include all who have died from any cause during the month following their confinement. The statement in the *Hospital* of Jan. 15th, 1910, p. 466, that we only count deaths from purely maternity causes is absolutely false, and we shall be only too glad to show our books to anyone interested in the truth of the matter.

Infantile mortality.—Mature, dying soon after birth, 22; mature, stillborn, 15; premature and immature, 78; premature and decomposed, 82. Of the mature the causes of death were debility, cyanosis, syphilis, and apnœa, but in most of the cases debility was the cause. Of the mothers admitted during 1909 19 had suffered, or were suffering, from syphilis. In 6 cases syphilis was suspected, but the grounds for suspicion were not conclusive. In the other years the proportion of syphilitic children has not been made out, but is probably much the same.

Children born.—Males, 704; females, 653; twins, 27.

Presentations.—Head, 1272; transverse, 11; breech, 46; knee, 1; foot, 23; face, 4; shoulder, 1; with cord, 17.

Operations.—Forceps, 57; versions (podalic), 14.

Complications.—Eclampsia, 3; albuminuria, 32; pneumonia, 4; hæmorrhage, 45 (accidental 26, unavoidable 15, post-partum 4); adherent placenta, 4; adherent membranes, 5; retained placenta, 1; ophthalmia in infants, 13 (neonatorum 4, catarrhal 9).

Number of mothers removed from the maternity wards on account of temperature, 5.

Number of midwives trained during the three years, 61. Of these 37 entered for the Central Midwives Board examination, two of whom failed. 25 nurses also had each a month's training in monthly nursing.

Remarks.

The maternal mortality is 0·45 per cent., a fractional quantity of which we are very proud considering the class of mothers we have to deal with, as indicated by the large number of immature babies who survived birth by only a few hours, and the still larger number of dead and decomposed infants that are to be found in the statistics. This lying-in hospital has been in constant use, and our records date back to 1858, more than half a century ago. It has been celebrated all that time for its remarkably low maternal mortality. In her notes on lying-in institutions published in 1871 Miss Nightingale refers in some detail to the statistics of the Liverpool Workhouse Maternity supplied to her by my predecessor, Mr. Barnes, and she gives in a table the admissions and the maternal mortality for the five years 1866, 1867, 1868, 1869, and 1870. The admissions were 2466, and the maternal mortality 13, or 0·53 per cent., a very much more remarkably low mortality at that period than is the 0·45 per cent. mortality for the past three years. The term asepsis was then unknown, and the architectural arrangements were the same except that the lavatories were more awkwardly situated than they are now. Yet the results were the envy of maternity hospitals throughout the country, and many deputations visited us to ascertain the conditions that brought us such safety. Many suggestions were made by these visitors as to the supposed cause; most were, however, unwilling to recognise that our charter of safety lay in our straw beds, beds that were discarded as soon as used and of which each patient used three, one in the delivery ward, one in the lying-in ward, and a third in the recovery ward, as described in THE LANCET in the article dealing with the same wards for 1906. They went away in sorrow because they had large possessions of valuable mattresses (hair), feather pillows, &c., and they could not stoop so low as to adopt straw beds. Fortunately for them, antiseptics and asepsis have allowed full scope for both safety and expense, and our workhouse maternity has now lost its pre-eminence in safety, but maintains its equality in that direction, while its pre-eminence in economy is much more marked than it ever was before. We have given up the straw beds owing to the introduction of fibre, which makes a cheap, easily replaced, and a more comfortable bed, and flock pillows have been substituted for straw ones.

Much the same routine is followed as was described in THE LANCET, but each patient now has only two beds during her passage through the lying-in, the delivery bed being removed from the maternity ward when the mother passes into the recovery ward. Here she obtains a new bed which has never been occupied by any person before, and this she uses until she leaves the maternity division. The bed is then sent away, never to return. The delivery bed is likely to become soiled with discharges, &c., and hence it is only used during delivery. From the behaviour of the patients it may be concluded that the fibre beds are very comfortable; the sleep is sound, and no complaints have ever been made about their hardness.

In the *Hospital* of Jan. 1st, 1910, p. 395, Sir Henry Burdett says: "We may point out although classification is essential for moral reasons in the general wards of a Poor-law infirmary, in the maternity wards it is doubly necessary on moral and hygienic grounds. No board of guardians has the right to subject any inmate of a Poor-law infirmary in any department to the risks of contracting a loathsome contagious disease, much less to permit infants to be subjected to such risks." In another place he says: "There they will see girls of 16 and young women who are physically healthy crowded together in the same wards with older women who may be suffering from contagious diseases of the most repulsive kind."

Now this picture is calculated to stir up the emotions of tender-hearted men and women, but it is drawn from the

imagination and not from real facts. The true picture is this: Women of child-bearing age come to the lying-in wards of the workhouse *at all hours of the day and night in labour*, and are received by the midwife in charge. Febrile cases and cases delivered in transit, as occasionally happens, are not admitted, as constituting a danger to the other inmates of the maternity, but all others in labour are. They are admitted without question, cleansed and prepared according as their condition allows, but any moral inquisition to decide the moral innocence or guilt of the applicants at that time would be out of the question. Some of Sir Henry Burdett's "girls of 16" are the most degraded and debauched of our applicants. These women are, it should be remembered, mostly strangers to us and come in from a big city in a condition of labour, and our primary duty is to attend to their great need, which is all the classification that can be made. Now there is not the slightest risk of any woman or child being infected by a loathsome disease from any other inmate. The medical men and nurses in attendance may be in danger, but using the precautions we do we have never had a case of blood-poisoning contracted in the one case or the other in the lying-in wards in the writer's time. The patients are never "crowded together." Each nurse, who is already trained in medicine and surgery, attends to only one case at the time, and is on the *qui vive* for her own sake as well as for the sake of the other patients for any signs of contagious disease. No woman ever sleeps on a bed that any other woman has ever slept on, and each baby has its own cot made up anew for itself, its own towels, bottles, &c.

After delivery the moral and physical conditions of the women declare themselves. The syphilitic are sent to the lock wards, the innocent girl is advised to communicate with her relations and friends, and as soon as she is well often goes home. But all while passing through the maternity wards have to conduct themselves in a becoming manner and are under the constant supervision of the nurses, and it might be astonishing to find them so quiet and subdued as they really are did we not remember that such quietness and seriousness are only natural after having passed through such a crisis in their lives.

Agnes Jones laboured in these very lying-in wards, and her life and work have stimulated the nursing staff ever since to higher aspirations. We all know that the Liverpool Workhouse is old and obsolete, but the advancements in medicine and surgery, combined with the indomitable energy of the lady superintendent and her staff, have overcome the architectural defects, and we can only say that the hospital, though old and defective, is still *efficient*. Changes are bound to come, and the marble and silver of other palatial hospitals will perhaps in time adorn a new Liverpool Workhouse Hospital, but whether the results will be better will depend, not on the lavish expenditure of money on display, but on the devotion and skill of the medical and nursing staff.

THE ACTION OF LIQUID KOLYNOS UPON THE BACILLUS OF INFLUENZA.

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THE kolynos preparations have recently been referred to in the Analytical Records from THE LANCET Laboratory.[1] They are described as "what pharmacists call elegant preparations" and as containing the following antiseptic agents: "benzoic acid, eucalyptus oil, peppermint oil, and thymol." The liquid preparation is certainly a very pleasant one for maintaining oral sepsis assuming that the claims made for it can be substantiated. Experiments made by Professor Loeffler have shown that kolynos is capable of destroying in a short time diphtheria bacilli, streptococci, and pneumococci, not only *in vitro* but in the human mouth. We have extended these investigations and ascertained its effect upon the influenza bacillus.

The bacillus used was obtained from Kral's laboratory, Prague, and subcultures were made on blood-agar every fourth day whilst the experiments continued. These experiments were made to determine the action of various dilutions of kolynos upon the bacillus: (*a*) in a broth emulsion; (*b*) in the presence of saliva; and (*c*) in the presence of such organic matter as may be brushed from the teeth.

The process adopted was as follows. The surface of a 48-hour blood-agar culture of the bacillus was scraped by means of a platinum loop, and the bacteria removed were thoroughly emulsified in 5 cubic centimetres of sterile bouillon, or in saliva, or in the teeth washings. Dilutions of kolynos with distilled water were prepared, 5 cubic centimetres of each dilution were placed in sterilised test-tubes, and each was inoculated with five drops of the bacillary emulsion. A control solution containing no kolynos was also prepared. At intervals of one minute subcultures were made on large blood-agar slopes, and after incubation at 37° C. for 48 hours any growth obtained was carefully examined, after staining by Gram's method and counter-staining with weak carbol-fuchsin.

TABLE I.—*Action of the Diluted Kolynos on the Influenza Bacillus in Watery Emulsion.*

Dilution.	Time culture exposed to action in minutes—									
	1	2	3	4	5	6	7	8	9	10
Control: No kolynos ...	+	+	+	+	+	+	+	+	+	+
3½ per cent. kolynos ...	+	+	+	+	+	+	+	+	+	+
4 ,, ,, ...	+	+	+	+	−	−	−	−	−	−
6 ,, ,, ...	+	−	−	−	−	−	−	−	−	−
10 ,, ,, ...	−	−	−	−	−	−	−	−	−	−

+ = Growth. − = No growth.

The results show that a 4 per cent. solution kills the influenza bacillus in five minutes, a 6 per cent. solution in less than two minutes, and a 10 per cent. solution in less than one minute.

TABLE II.—*Action of Diluted Kolynos on the Influenza Bacillus in Salival Emulsion.*

Dilution.	Time culture exposed to action in minutes—									
	1	2	3	4	5	6	7	8	9	10
Control: No kolynos ...	+	+	+	+	+	+	+	+	+	+
4 per cent. kolynos ...	+	+	+	+	+	+	−	−	−	−
5 ,, ,, ...	+	+	+	−	−	−	−	−	−	−
6 ,, ,, ...	+	−	−	−	−	−	−	−	−	−

Admixed with saliva the kolynos kills the influenza bacillus within seven minutes in a 4 per cent. solution; within four minutes in a 5 per cent. solution; and within two minutes in a 6 per cent. solution. The presence of saliva therefore interfered little if at all with the action of the kolynos. The whole of the other bacteria present in the saliva were not destroyed, but they were considerably reduced in number in the solutions containing 5 and 6 per cent. of kolynos.

TABLE III.—*Action of Kolynos upon the Influenza Bacillus in the Presence of Teeth-washings.*

Dilution.	Time culture exposed to action in minutes—									
	1	2	3	4	5	6	7	8	9	10
Control: No kolynos ...	+	+	+	+	+	+	+	+	+	+
4 per cent. kolynos ...	+	+	+	+	+	+	+	+	−	−
5 ,, ,, ...	+	+	+	+	+	+	−	−	−	−
10 ,, ,, ...	−	−	−	−	−	−	−	−	−	−

The 5 per cent. solution of kolynos therefore destroyed the influenza bacillus in less than seven minutes and the 10 per cent. solution in less than one minute. The strength recommended for use is stated on the labels to be 33 per cent. It is obvious, therefore, that a dilution of this strength

[1] THE LANCET, April 9th, 1910, p. 1007.

will kill the influenza bacillus practically instantaneously, certainly during the time occupied in brushing the teeth and rinsing the mouth.

An attempt was made to ascertain the action upon the influenza bacillus in patients suffering from influenza. There was a difficulty in finding cases in which the bacillus could be detected, but a group of three undoubted cases were selected in which the bacillus influenzæ and micrococcus catarrhalis were found. The cases were all typical influenza of moderately severe type.

CASE 1.—The patient, a male, aged 29 years, when first seen was having a rigor, the temperature being 97·2° F. and the pulse 82. The throat was red and congested, there was frontal headache, and also pains in the back and the limbs. He was ordered to bed and to use kolynos as a dentifrice and spray. Three days later he was much improved; the throat looked normal, but there was a good deal of post-nasal discharge, and a little headache. The spray was continued, and two days later, when seen, the patient was practically well.

CASE 2.—The patient, a male, aged 29 years, when first seen had a temperature of 102° F., and the pulse was 104. Pain in the head and the eyes was severe, and in the back and the limbs it was slight. The urine was highly coloured. The fauces were swollen and red, and the tongue was furred. The bowels had been opened; the patient was sweating. Kolynos was used. Next day the temperature was 99°, the pulse was 80, and the pains were diminishing. He had profusely sweated during the night. Three days later the temperature and the pulse were normal, but there was a little tenderness upon deep pressure over the left frontal sinus. A stronger spray was prescribed, and the use of the kolynos as a dentifrice was discontinued on account of tenderness of gums. The patient was allowed out of bed. Two days later he was quite convalescent.

CASE 3.—The patient, a female, aged 26 years, after feeling seedy for some hours had a rigor, and when she was seen complained of sore-throat, aching of the back and the limbs, supra-orbital headache, and stiffness in the nose. The temperature was 101° F. and the pulse 124. The spray gave much relief. The temperature two days later was 98·6° and the pulse 92. The patient was practically convalescent.

In none of the above cases could the influenza bacillus or micrococcus catarrhalis be discovered in the swabs taken on the third or fourth days. Use of the spray caused for a short time a profuse discharge of mucus from the nose, with corresponding relief afterwards. Apparently the kolynos used as a fine spray destroyed the bacteria usually found in cases of influenza, and as the treatment seemed to afford speedy relief and the remedy proved an acceptable one, it appears to us to be worthy of an extended trial.

THE TREATMENT OF SPASMODIC ASTHMA BY THE HYPODERMIC INJECTION OF ADRENALIN.

BY BRIAN MELLAND, M.SC. VICT., M.D. LOND.

ASTHMA for the purposes of this paper is defined in the words of C. T. Williams "as a severe paroxysmal dyspnœa recurring at more or less well-marked periods, generally in the night, the dyspnœa being due to spasmodic contraction of the bronchi, produced by a variety of causes." This rules out altogether the non-spasmodic dyspnœa of emphysema and dilated heart, and so-called renal asthma which appears to be a pure dyspnœa due to cardiac failure with or without lung œdema.

What is asthma? All observers agree that to explain the sudden onset, the hyper-resonant percussion note during an attack, the absence of the ordinary inspiratory and expiratory sounds and their replacement by musical murmurs all over the lungs, a sudden circumscribed narrowing of the bronchial tubes, chiefly the smaller one, must take place.

How are the tubes narrowed? The most usual view is that they are narrowed by the spasmodic contraction of the circular muscle fibres round them. These non-striped circularly arranged fibres were discovered by Reisseissen, and Laennec[1] quotes in support of this view of the disease the fact that during an attack a patient could sometimes after holding his breath so as almost to cause insensibility actually breathe naturally for one or two respirations, thus clearly demonstrating that the spasm was capable of momentary relaxation. Hyde Salter[2] was one of the chief early exponents of this view in England. He points out that the class of remedies which were found effective in relieving the spasm of asthma were those which were found effective in relieving muscular spasm elsewhere, such as emetics, tobacco, &c.

There is, however, another view, supported by Traube, Blackley, and Sir Andrew Clark,[3] that the narrowing of the tubes in asthma is due to a rapid tumefaction of the mucous membrane of the bronchi, a sudden state of congestion or erectility sufficient to cause a diminution in calibre of the smaller tubes. Traube calls asthma a very acute catarrh. Blackley says the asthma of hay fever is the same as the nasal turgescence but extending further to the mucous membrane of the bronchial tubes. Sir Andrew Clark considered the phenomena of an attack to be explained by a vaso-motor neurosis of the mucous membrane by which swelling of it took place suddenly, just as a vaso-motor neurosis of the vessels of the skin may produce urticaria. Storch is said to have actually observed with the laryngoscope during an attack that the whole length of the trachea and part of the right bronchus were deeply congested.

However, whether there is increased tumefaction of the mucous membrane or not, it is probable that the chief element in the narrowing of the tubes is contraction of the circular muscular fibres.

The inspiration is forcible in asthma and causes slight indrawing of the epigastrium and lower ribs, but expiration takes about three or four times as long, and in Bamberger's words, "presents the picture of a most laborious, tormenting, and at the same time fruitless struggle."[4] If the attacks occur frequently these violent expiratory efforts lead to serious damage to the lungs in the production of dilated air cells or emphysema. Exactly why the expiration through narrowed tubes is more impeded than the inspiration is not quite clear.

The type of dyspnœa in asthma contrasts with that seen in spasm or other narrowing of the glottis, or the dyspnœa of plastic bronchitis where the difficulty is inspiratory. Here there is much more indrawing of the epigastrium, intercostal spaces, and supraclavicular regions, and the tendency is towards the production of atelectasis or collapse of the air cells.

Perhaps one of the most instructive ways of looking at asthma is to consider it an exaggeration of a normal defensive reflex in a person with a hypersensitive nervous system. The circular muscles of the bronchi are present in all of us, no doubt for some good reason. If a thoroughly normal individual suddenly finds himself in an atmosphere of sulphur dioxide he will probably get some spasm of his bronchial tubes as well as spasm of his glottis. This is good for him. It prevents too much of the gas getting into the lung alveoli and warns him that something is wrong with the atmosphere.

The chief defensive mechanisms which the lungs have against impurities in the atmosphere are:—1. At the nose: erectility or vascular turgescence of the Schneiderian membrane, which may cause (*a*) the motor reflex act of sneezing, a sudden violent expiratory effort with the glottis momentarily closed, or (*b*) nasal asthma. 2. At the glottis: (*a*) spasm, which may be complete and prolonged, or (*b*) cough, a momentary closure of the glottis followed by a sudden spasmodic expiration. 3. In the bronchial tubes: (*a*) secretion of mucus and ciliary action which carries it upwards till it produces cough; (*b*) spasm of the circular muscles producing asthma.

The vagus is both the sensory nerve to the bronchial mucous membrane and the motor nerve to the circular muscle fibres of the tubes. When the sensory nerve endings are irritated in certain ways the circular muscle fibres contract by a simple reflex; similar to the corneal reflex, for example. The reflex arc probably takes place in all cases through the medulla, though C. T. Williams supposes it may take place through the ganglia in the pulmonary plexuses.[1]

It has been shown by Dresser[5] that electric stimulation of the main vagus produces contraction of the bronchial tubes, and that the motor effect is paralysed by atropine, the tubes failing to contract if the animal is previously injected with this poison.

In addition to afferent impulses from the bronchial tubes themselves, impulses causing an attack of asthma may reach the medulla from the nose, as in nasal asthma (through the first, or more usually the fifth nerve), from the larynx possibly, and certainly from the abdominal organs (stomach and small intestine) supplied by the vagus, as when indigestion excites it. Afferent impulses may come also from the ear, possibly through Arnold's nerve, a branch of the vagus to the external meatus. Thus asthma is sometimes brought on by the irritation of wax in the external meatus and relieved on its removal. Emotion may start a spasm, and in this case the impulse comes through to the medulla from the higher centres.

As contrasted with the normal individual we must suppose in the asthmatic a hypersensitiveness of the nervous system in some part of the reflex arc; in idiopathic asthma an individual sensitiveness to certain stimuli which would not act as irritants at all in a normal individual. We can understand that various sorts of dust, such as road dust, dust from the higher atmosphere as seen in subtropical dust-storms, the dust of cotton-mills, hay-lofts, and flour-mills would produce asthma. When the smell of ipecacuanha, or the pollen of many grasses and flowers as in hay fever, or even the neighbourhood of dogs, cats, horses, or hares produces it, we are more surprised and call it idiopathic.

Some asthmatics attribute their attacks to climatic causes, such as damp air, either hot or cold; others to stuffy air when there are stillness and absence of all wind. I used to find the coast line in the Canary Islands particularly bad for asthma when I was resident there, though large numbers of asthmatics used to be sent out from England by their physicians for the sake of the dry climate. I believe it was due to the irritation produced by fine particles of salt in the air formed by the break of the waves.

The relatively impure atmosphere of large towns in England is usually good for asthma; part of the good may be due to the dryness of the subsoil in these large paved areas. Mist or fog will often cause asthma in the bronchitic, but, curiously enough, some asthmatics never feel better than when in a real London pea-soupy fog. Every asthmatic is a law unto himself as to the influence of climate and locality.

Nasal asthma, or asthma nasal in origin, may be caused by some actual nasal lesion, such as hypertrophic rhinitis, hypertrophied turbinals, polypus, adenoids, or deviation of the septum. When these conditions have been put right by surgery the asthmatic attacks may cease. By far the most common cause of nasal asthma, however, is not a gross lesion in the nose, such as any of the above, but a peculiar irritability of the mucous membrane, an undue sensitiveness which causes, or is associated with, engorgement of the erectile tissue, and which produces a subjective feeling of titillation or tickling. This tickling is sometimes worse in the recumbent posture which favours engorgement. The actual cautery to the turbinals sometimes cures this variety of nose itching and the asthma at the same time, just as it cures the irritable nose of hay fever which often leads on to summer or hay asthma. These irritable noses may produce attacks of severe paroxysmal sneezing instead of, or in addition to, asthmatic attacks, attacks of sneezing so long and so violent that the patient is thoroughly exhausted.

There are various microbic diseases which at certain parts of their course increase the irritability of the vagus, as of many of the other nerves. Syphilis and whooping-cough are cases in point. In whooping-cough and rickets (which is probably due to a toxin) the spasm is mainly laryngeal, and in locomotor ataxy (or late syphilis) we may have "laryngeal crises" as they are called. Syphilitics, however, may develop spasmodic asthma, to which they have been strangers before infection. C. T. Williams[1] suggests that in these cases the bronchial glands are enlarged and press on the vagus in the region of the anterior and posterior pulmonary plexuses, and asthma following on arrested phthisis has been put down by him to the same cause—namely, pressure of enlarged glands (tubercular in this case). According to Fowler,[6] however, the pathological evidence shows that in the asthma of syphilitics there is usually some stenosis of the main bronchi caused by gummatous and fibrotic distortions of the tubes themselves, with dilatation of the bronchus on the peripheric side of the narrowing, and emphysema in the section of lung affected.

Similar distortions with partial stenosis of main bronchi may be produced in the fibrotic contractions of old phthisis, and are more likely to produce asthma than pressure of glands in the mediastinum. Indeed, aneurysm or other tumour in the mediastinum, including tubercular gland masses, seldom lead to asthma, but cause a characteristic spasmodic cough, though they may cause a dyspnœa which differs, however, from true asthma. By far the commonest precursor of asthma is a bronchial mucosa morbidly sensitive to attacks of inflammation in childhood, which may follow the infections of ordinary epidemic catarrh, influenza, measles, or whooping-cough. This asthma associated with bronchitis is said by Hyde Salter to comprise 80 per cent. of all cases.[2] Asthma is hereditary in 40 per cent. of all cases according to the same authority.

C. T. Williams[1] says that the characteristic form of chest is frequently transmitted from parents to children. He is, I think, wrong in this; what is really inherited is the morbidly keen nervous system and morbidly sensitive bronchial mucosa. The barrel shape of the chest is the result of previous attacks of bronchitis or asthma, not the cause of them.

Asthmatics, in addition to possessing a very irritable vagus reflex, are often highly neurotic in other ways and suffer from neuralgia, insomnia, and mental instability. Some asthmatics are liable to outbreaks of nettlerash, psoriasis, or eczema. Various drug habits are easily developed in asthmatics, such as the morphine, alcohol, chloral, hyoscyamine, or cocaine habits. All these drugs are used by different asthmatics to relieve the agony of the attacks, and there is distinct danger of a habit being formed if they are used frequently. We are therefore told by some writers to "renounce the use of specifics." Many of the patients, however, will not renounce them. We are to use instead of these stronger drugs during the agony of the spasm the harmless antispasmodics ether, ammonia, the nitrites, coffee, ipecacuanha, and lobelia. The advantage of these is that if they do not do very much good, at any rate they do not do much harm, and they at least act as a placebo till the spasm passes away naturally.

When I was resident in the Canary Islands I saw many very severe attacks of asthma lasting with slight intermissions for two or three days, and I have several times had to stay all night with patients. I have often had to use all of these harmless antispasmodics one after the other and have been still far from relaxing the spasm. Emetics such as ipecacuanha, in 10 grain doses, apomorphia, or lobelia make the patient feel very bad indeed, and partially relax the spasm, but it usually comes on again after the vomiting is over, and the remedy is nearly as bad as the disease. A little ease has occasionally been obtained with nitroglycerine or amyl nitrite, but it makes some patients feel worse. The true use of the nitrites is in dyspnœa with increased arterial tension, as in certain forms of renal and cardiac dyspnœa, not to relax the spasm of true asthma.

Chloral was more often of some use, but the only drug which relaxed the spasm enough to let the patient sleep as a rule was morphia, ¼ grain or more by hypodermic injection. Some asthmatics arrived with their own syringe and tablets. I found that the temperature previously normal was often raised to 101° or 102° F. after morphia and the patient was left wheezy; the attack did not clear away completely. Of course, if the higher centres and medulla are drugged with any strong sedative the vagus reflex is less acute. One of my patients—an old hand—used to be quite happy if he could retire to bed with a bottle of whisky when he felt asthmatic. Half of it was usually sufficient to relax the spasm. He had renounced the use of other specifics for asthma; he found this the best.

What specific drugs, other than morphia, do asthmatics themselves pin their faith to, and most frequently use during an attack? Fuming inhalations containing datura stramonium or tatula, I believe, are by far the most common. These have been used by physicians for many years, but the popular knowledge of them, Sir James Sawyer[7] points out, dates particularly from about 25 years ago, when they were used by the Earl of Beaconsfield in his last illness, and therefore much noticed in the public press. Such a powder is often represented by some such formula as follows:—potassii nitras, ½ ounce; pulv. anisi fructus, ½ ounce; pulv. stramonii fol., 1 ounce.

The relief is often real and great; the patient can sleep, though the spasm is not quite relaxed. This we can understand when we reflect that stramonium contains the powerful

alkaloids atropine, hyoscyamine, and some hyoscine. As before mentioned, Dresser[5] has shown that atropine paralyses the motor endings of the vagus in the bronchial muscles, so that if the individual can be got well under its influence the spasm must relax. The hyoscyamine and hyoscine act twice as strongly as atropine in paralysing the nerve terminations, and hyoscine also acts on the brain, producing sleep. The smoke of burning stramonium has been shown to contain small quantities of the three alkaloids, so that it is possible for the drugs to enter the blood from fuming inhalations, just as in opium smoking. A spray containing atropine, if finely divided and used early in an attack, is similarly absorbed, and causes relaxation of the spasm by paralysing the bronchial muscles. Any remedy which contains ½ per cent. of atropine requires to be used with great caution.

We now come to what is more particularly the subject of this paper—namely, the treatment of the paroxysm of asthma by the hypodermic injection of adrenalin. In the form of spray adrenalin has been much used in hay fever, and also in hay asthma, but given in this form its effects are not striking. Given by hypodermic injection, however, its effects are truly marvellous in relaxing the spasm of asthma instantly, and as I have seen no notice of this in the medical papers during the last two years I feel sure this action of adrenalin in not generally known. I shall narrate with some detail the first three cases in which I used it; they have all now given it an extended trial and it has never failed.

CASE 1.—A married lady, aged 30 years, came to me in October, 1905, suffering from asthma, which came on every morning at about 3 o'clock. The family history was significant in this, that two of her brothers also suffered from asthma, one so badly as to prevent him from doing much work. The asthma had first started about six years before, while living at the seaside; at first it only came occasionally (every few months), but it had got more and more frequent, till it came nightly. She suffered from hay fever, without asthma, for three summers before the asthma declared itself. The only other previous illness that could be recollected was, that eight years before, she had been swollen all over. She had pain in the back, swollen face and ankles, but the state of the urine and kidneys had not been ascertained till four years later, when albumin was found present in the urine.

The patient was, when I first examined her in October, 1905, a thin, almost emaciated woman, stooping and feeble in her movements. There was dry eczema in the folds of the neck, about the nostrils, and in the bends of the elbows and knees, leading to thickening and cracking of the skin. The chest showed signs of emphysema and slight catarrh; it was somewhat barrel-shaped, slightly over-resonant, and wheezy in expiration. The pulse was always rapid, never under 100, and it rose at once to 120 or 140 when she walked. She got much out of breath when walking, and there were well-marked signs of cardiac overstrain. Albumin was present in the urine, but in very variable quantity—sometimes an appreciable amount, at other times very little. She used a spray of atropine and cocaine. I put her on a mixture of potassium iodide (3 grains), chlorodyne (5 minims), and liquor nitro-glycerini (1 minim) three times a day, with one Nativelle's digitaline granule (¼ milligramme) every other day. There was no very marked alteration under this treatment. Knowing that some people obtained relief in hay fever from spraying the nose with adrenalin solution 1 in 4000, I got her to try it. It eased the attacks a little but not as much as atropine and cocaine.

In January, 1906, she sent for me when a paroxysm of asthma was on. It was not very severe, but was lasting longer than usual. I thought I would try the effect of adrenalin hypodermically, so injected 10 minims of the 1 in 1000 solution into the arm. The effect was instantaneous almost. The pupils suddenly dilated, the eyes widened perceptibly, and the face became more pale, the combined effect of this giving a frightened look to the face. The singing sounds in the chest immediately ceased, and all subjective feelings of tightness passed away. She was at once able to cough quite naturally, and a little expectoration began to come up, as usually happens after an attack has subsided. I never saw such a striking effect from any drug at any time. The absolute completeness and extreme rapidity of the passing away of the asthmatic spasm were the most striking features. Moreover, the asthma remained entirely away for seven days, and before this it had occurred nightly for many months. When the asthma recurred in seven days' time, the adrenalin was used again, and it stopped it just as before. The patient's estimate of the length of time required to stop the asthma completely was "about as long as it takes you to count five." The effect of the adrenalin, however, did not last for seven days on this second occasion, and for a time she was taking away her asthma every night with an injection of 6 minims, which was found quite sufficient. After four or five weeks of this removal of the spasm directly it tried to come on, the incidence of the asthma became much less frequent, and in a period of three months time there were only seven attacks.

She had left off all her old sedative medicines, but still took for a month or two potassium iodide (2½ grains) and liquor arsenicalis (2½ minims) three times a day. The general strength improved enormously, the pulse came down to 80, and the albumin entirely disappeared from the urine.

In this case there has been not only an immediate relief of the spasm whenever adrenalin was used, but the regular breaking of the spasm, whenever it occurred, over a consider able period of time seems to have very much discouraged the nervous system, so that it is far less ready to give way to asthmatic attacks. More lately the patient has had a temporary nervous breakdown, but the asthma keeps away for months at a time and her general health is enormously improved.

CASE 2.—The patient, a married lady, 27 years of age, began with asthma at 12 years of age, after an attack of bronchitis. The asthma has been worse in summer as a rule, in dry hot weather, but she has attacks at all times of the year. There is no doubt that in this case dust acts as an irritant, as the asthma is very liable to come on after motoring. The dust of a hay-loft has brought it on, and it is very liable to come on after a dance in a crowded ballroom. This patient cannot bear hot stuffy rooms, and has been accustomed to take a good deal of exercise in the open air. Fog and mist seem to have no influence in causing an attack. She has used for eight or nine years a stramonium burning powder whenever the attacks have come on. She took the Buffalo cure for 18 months some years ago, but without any appreciable effect. This patient, like many asthmatics, does not look upon herself as an invalid, and usually treats herself, but in 1902 I was sent for in a severe attack which did not yield as usual to the burning powder. I first tried the inhalation of a capsule of nitrite of amyl. This she disliked, as it did not relieve the breathing at all, and made her feel ill. The spasm was finally made a good deal easier with an injection of morphia (¼ grain). Afterwards she took potassium iodide and digitalin for a few weeks, but I saw no more of the case till July, 1906, when I was sent for to relieve an attack, which was again much worse than usual. I injected ¼ grain of morphia as before. This had caused no relief at all within 15 minutes, so that I then injected 8 minims of adrenalin. This caused immediate relaxation of the spasm. She was married a few weeks after this, and had asthma every day while away on the continent in very dry dusty weather. She could always take away the asthma at once with an injection of 4 or 5 minims of adrenalin, but it would return in 12 hours, so that two injections a day were taken for about a month. When she shortly became pregnant the adrenalin was discontinued owing to the fear that it might act as an oxytocic, but it was used two or three times during pregnancy when the spasm was worse than usual and would not yield sufficiently to the burning powder.

This patient improved very much in general physique and gained weight considerably, but this may have been connected with maternity and not with adrenalin. In this case I do not think that the incidence of the attacks has been much altered in frequency, but after the first month the adrenalin has not been used as the regular remedy to cut off the spasm at once. The burning powder is used first, as it is probably less trouble for a person not accustomed to a hypodermic syringe, and adrenalin is only used afterwards when the attack is severe, and will not yield. It stops the attacks as rapidly as when first used two and a half years ago. I believe that the asthma should be checked directly it comes on by injection of adrenalin, if the habit is to be altered and the incidence to be rendered less frequent.

CASE 3.—A lady, aged 34 years, began to suffer from hay fever with asthma in the summer of 1904. There were much stuffiness, bronchitic wheezing, and breathlessness on exertion all day as well as the more marked asthma at night time. The nasal symptoms were relieved considerably by a weak cocaine spray, one or two grains to the ounce of camphor water, which personally I find by far the most useful treatment in simple hay fever. For the asthma she was given a medicine with a formula constructed after that of Dr. Hare's anti-asthmatic elixir, one to two teaspoonfuls three times a day: sodium iodide, 2 grains; sodium bromide, 2 grains; tincture of lobelia, 2 minims; fluid extract of euphorbia pilulifera, 3 minims; nitroglycerine, 1-200th grain; aqua, &c., to 1 drachm. This made little difference to her condition. Her bronchial asthma and hay fever disappeared at once on going a sea voyage.

In 1905 she again suffered in the same way for six or eight weeks during the hay season. In 1906, when the asthma and hay fever returned, I gave her adrenalin (5 minims) by hypodermic injection. It removed the asthma at once. She then began having nightly injections when the asthma came on at about 3 A.M., and finally she hit upon the expedient of taking an injection every night at bedtime so that the spasm never came on at all during the night. The breathing during the day remained easy; the bronchitic condition did not develop while adrenalin was used. In 1907 and 1908 she has continued to use the adrenalin injections every evening for a month in the hay season and the asthma keeps away while it is used. She still uses the weak cocaine spray for the nose. The whole complaint which used to trouble her seriously in causing bronchial stuffiness and great shortness of breath during the whole of the hay season seems now a very small thing.

I may say that I tried particularly in the first of these cases adrenalin by the mouth up to 15 minims, but it had not the slightest effect on the asthma when given in this way, nor did it show its dilating effect on the pupil.

Now, why should adrenalin act in this way on spasmodic asthma? As you know, Oliver and Schäfer[10] in this country showed that the medulla of the suprarenal gland contained a body which exerted a powerful action on the organism in contracting blood-vessels, raising the blood pressure and stimulating the heart muscle, and which the glands normally secrete into the blood-vessels. Takamine and Aldrich in 1900 simultaneously succeeded in crystallising out this active principle adrenalin, $C_9H_{13}NO_3$; also Abel (epinephrin) and Furth (suprarenin) similar or identical bodies.

Stolz[11] has worked out its chemical constitution and finds it to be o-dioxy-phenyl-ethanol-methylamine, $(OH)_2 C_6H_3CH(OH) (CH_2NH CH_3)$, not an exceedingly complex body after all. He has succeeded in preparing it synthetically and this artificial suprarenin or adrenalin has been shown by Biberfeld[11] to be identical in its physiological action with the natural product. For instance, 1-1000th milligramme of each preparation introduced intravenously

suffices to produce in rabbits of moderate size a just noticeable increase of blood pressure. Similarly both preparations give rise in dilution up to 1-500,000 to pupil dilatation in an enucleated frog's eye. In several other respects and in their toxic power both preparations were identical. Their only difference is in their effect on light; the artificial product is optically inactive.

A very large amount of experimental work has been done on the physiological action of adrenalin during the last few years, some of it somewhat contradictory. We may epitomise some of the results.

The blood pressure rises within three seconds of intravenous injection, chiefly owing to the contraction of the vessels of the splanchnic area and skin; and simultaneously the systole of the heart is enormously increased, and owing to the sudden rise of blood pressure the heart is slowed (through the depressor fibres of the vagus).

In the isolated mammalian heart, however, where the vagus is cut off, the force of the beat is augmented and accelerated, the action of adrenalin being stronger than that of any other drug in this respect, but its duration very limited (Dixon [12]). Slowing of the heart does not take place when the vagus is cut or poisoned by atropine. The rise in blood pressure is caused by a marked contraction of the peripheral arterioles, from direct action of adrenalin on their muscular coats, in the vessels of the skin, stomach, intestine, mesentery, and uterus; and the bladder vessels slightly. Adrenalin does not contract the vessels of the brain, or lung (pulmonary), or liver, which hence, when large doses have been given, become much congested with blood expelled from the splanchnic vessels. The retinal vessels may be seen to dilate with the ophthalmoscope. The vessels of the brain, lung, and liver are not innervated with vaso-motor fibres (Dixon [12]), and this is why they do not contract with adrenalin.

Gerhart [13] states that the vessels of muscle are scarcely changed in calibre. In an excised organ innervated by the sympathetic the contraction of the vessel walls may be demonstrated by perfusing blood containing adrenalin through the artery. The outflow through the vein almost ceases. Direct application of adrenalin to the mesentery often entirely obliterates the vessels; mucous membranes are similarly affected, as seen in chemosis of the conjunctiva, which gives place to pallor. Apart from the circular fibres of blood-vessels, other forms of unstriated muscle are spasmodically contracted by adrenalin. The muscles of the eye, innervated from the sympathetic, contract, causing dilatation of the pupil, withdrawal of the nictitating membrane, separation of the eyelids, and protrusion of the eyeball, exactly as after cocaine or stimulation of the cervical sympathetic.

The third nerve muscles are unaffected. The uterus contracts, also the vagina, the vas deferens, vesiculæ seminales, and external genitals. Contraction of some involuntary muscles is inhibited by adrenalin. The cardiac sphincter of the stomach and the internal anal sphincter relax. The movements of the stomach, intestine, and bladder are retarded or altogether arrested. As Cushny [14] observes, "adrenalin acts on a large number of forms of involuntary muscle, and apparently in diametrically opposite ways, causing constriction in many cases, but inhibiting it inothers."

It is noted that stimulation of sympathetic nerves has similar results in most cases. For instance, stimulation of the splanchnics causes (1) contraction of intestinal arteries; (2) relaxation of the muscular coats of the bowels. But adrenalin acts even after degeneration of the nerve endings, directly on the muscle fibres, and this would seem to indicate a fundamental difference in the chemical characters of the different muscle fibres.

How can we explain this fundamental difference to the action of adrenalin of different muscle fibres? It seems to me the key is to be found in Gaskell's [15] work on the system of efferent nerves which innervate the different parts of the vascular and visceral systems. He shows that all the nerves to the blood-vessels and organs do not leave the central nervous system uniformly, but in three great outflows, (1) cranial, (2) thoracico-lumbar, and (3) sacral, there being two marked gaps separating the three outflows caused by the interpolation of the plexuses for the innervation of the anterior and posterior limbs respectively. The thoracico-lumbar outflow or sympathetic outflow leaves the spinal cord in the anterior roots of the spinal nerves from the second dorsal to second lumbar inclusive, passing thence into the lateral ganglia of the sympathetic.

His own work and that of Langley, Anderson, and others enable Gaskell [16] to state definitely that from the thoracico-lumbar or sympathetic outflow arise:—

(1) All the nerves which cause contraction of the unstriped muscles of the skin, whether pilo-motor or not; (2) all the nerves which cause secretion of sweat glands wherever situated; (3) all the nerves which cause contraction or augmentation of the action of muscles belonging to the vascular system; (4) all the nerves which are motor to all organs derived from the Wolffian and Müllerian ducts, for example, the uterus, ureters, and urethra. It is essentially an efferent skin system.

On the other hand, the cranial and sacral outflow are concerned with the supply of nerves to the alimentary canal, they form essentially an efferent gut system in contradistinction to the sympathetic or skin system. The vagus or cranial outflow supplies the gut as far as the ileo-cæcal valve, the sacral nerves supply the gut beyond the valve—that is, the cloacal region which includes the large intestine and the bladder (except the trigone).

The motor nerves to the trigone, ureters, and urethra arise from the thoracico-lumbar outflow; they belong to the muscles in connexion with the Müllerian and Wolffian ducts and skin. The ileo-cæcal valve alone of all the gut is innervated by the thoracico-lumbar or sympathetic outflow. This has been recently shown by Elliott, and that it is in reality a sphincter muscle.

It will be found on examining the pharmacological evidence that all the involuntary muscles supplied by the thoracico-lumbar outflow are contracted by adrenalin. (Its action on the ileo-colic valve does not appear to have been investigated, but it may be confidently predicted that it will cause its contraction.) This generalisation that adrenalin stimulates or contracts muscles supplied by the sympathetic nerve, and those only, was borne in upon me when I first read Gaskell's anatomy of the lumbo-sacral outflow. I thought it was an original observation, but a few days after I found it had been discovered before. Thus Gaskell [17] says:—

One clue has arisen quite recently which is of great importance and must be worked out in the future—viz., the extraordinary connexion which exists between the action of the sympathetic nervous system and the action of adrenalin. This substance when injected into an animal produces the same effects as stimulation of the nerves which belong to the lumbo-thoracic outflow of visceral nerves, i.e., the system known as the sympathetic nervous system, which is distinct from both the cranial and sacral outflows of visceral nerves. The similarity of its action to stimulation of nerves is entirely confined to the nerves of this sympathetic system and never resembles that of stimulation of either the cranial or sacral visceral nerves.

He mentions another most important point which shows the intimate connexion between the adrenals and the sympathetic system from the point of view of the evolution of the latter system—namely, the fact that even adrenalin obtained from the elasmobranch fishes will produce in highest mammals all the effects known to occur on stimulation of its sympathetic system.

I cannot find, however, that Gaskell or any of the other authorities have noted the other equally important fact which the pharmacology seems to me to prove—namely, that adrenalin inhibits or relaxes all involuntary muscles supplied by the cranial and sacral outflows. All the vagus-supplied muscles are relaxed at once. This has been experimentally described for all the muscles in the abdomen supplied by the vagus, and from the effect of adrenalin in asthma there is no doubt the vagus-supplied bronchial muscles are inhibited in the same manner. The lungs originate as an outgrowth from the fore-gut. In the Dipnoi fishes, where they first occur, they can be seen to be a modification of the swim bladder of ordinary fishes. They naturally take the vagus nerve-supply of the rest of the fore-gut. The circular muscles of the bronchi have been experimentally shown to be contracted by the vagus as their motor nerve. What I postulate is, that this contraction is immediately inhibited by adrenalin and also as a corollary by strong stimulation of the sympathetic.

Neither the vagus nor sympathetic system has any nerve supply to the pulmonary vessels, arteries, or veins, and their variations in calibre must depend solely on the pressures within them. The vessels of the mucous membrane of the bronchial tubes are, however, supplied by the ordinary systemic arteries—the bronchial arteries, and these arteries in all probability possess vaso-motor nerve fibres like the ordinary arteries of the body. All vaso-motor nerve fibres are derived from the thoracico-lumbar sympathetic, and the presence of adrenalin in the blood will cause blanching of the bronchial mucous membrane simultaneously with the relaxation of the circular muscle fibres, and thus tend to remove the asthma even more completely than a simple relaxation of spasm.

When we reflect it is easy to see why the blood-vessels and circular fibres of these organs—bronchial tubes, small intestine, &c.—should be supplied by opposing nerves. Take the gut, for instance, when full of food and active in

peristalsis. The motor nerve for this peristalsis is the vagus, which is now in full work reflexly, as it feels the food inside. While digestion is taking place it will be an advantage to have all the blood-vessels relaxed, so as to promote the local blood-supply. Therefore while the vagus is stimulated the vaso-motor sympathetic is inhibited and thus the small vessels dilate. In the quiescent and empty gut when the vagus stimulation has ceased the sympathetic stimulation begins, causing the blood-vessels to contract actively with their circular fibres, and keep the gut blanched.

In the bronchial tubes, again, suppose an irritant gas, as SO_2, or irritant substance, as fine cotton fibre, has gained entrance. The irritation of the vagus sensory fibres causes the motor reflex spasm of the circular bronchial muscles tending to keep out further irritant. This vigorous action of the vagus inhibits the sympathetic vaso-constrictor nerves, and the bronchial mucosa becomes congested through dilatation of its blood-vessels. This free blood-supply will both help the production of mucus by the mucous glands and assist the closing of the smaller bronchia, and thus protect the alveoli from the entrance of the irritant.

As said before, the asthmatic reflex is in its essence a physiological and conservative process. When it seems to have good cause for its presence, as in the above example, we shall not be always justified in violently reversing it by the injection of adrenalin. But as a rule the asthmatic is pathological. He has too much vagus in his cosmos, and his sympathetic outflow is below par. We would like to touch up his own adrenal gland or his sympathetic nerve, and if we cannot get at these we can at least inject some other adrenalin into him and get the same result.

The effect of violent emotion in removing an attack of asthma is well known, and I have no doubt it is due simply to sudden violent stimulation of the sympathetic overcoming the vagus. If one suddenly meets a lion in the path the heart gives a bound and is immediately vastly accelerated: the skin blanches, a cold sweat breaks out, and "each individual hair stands on end"; the pupils dilate, eyes widen and stand out, and the blood pressure rises rapidly, as a good high blood pressure is useful to the organs of locomotion in these circumstances. All these signs, which are historical as those of fear, are exactly the same as those produced by stimulation of the sympathetic or injection of adrenalin. As we know also, in extreme fear the vagus and sciatic outflow are inhibited, peristalsis ceases, and the anal and vesical sphincters relax, as well as the cardiac sphincter of the stomach. Undoubtedly the whole vagus outflow is inhibited, including the bronchial muscles. The nervous system is far too busy to pay any motor attention to the efferent gut system when the efferent skin system and voluntary muscles and heart require so much more attention if life is to be saved from the lion. I have thought sometimes that a bad paroxysm of asthma might tend to cure itself by the downward pressure of the diaphragm actually pressing mechanically on the adrenal gland and stimulating it to get rid of adrenalin through the adrenal vein into the general blood stream.

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Altrincham.

A NOTE ON DESICCATED CULTURE MEDIA.

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I HAD been working on the desiccation of culture media for a considerable time, had completed my experiments, and put the method on a practical basis, when I heard that Mr. F. R. Chopping of Westminster Hospital had recently made a communication on the same subject before the Royal Microscopical Society. I think it desirable, therefore, to publish a note on the results of my own work

The preparation of small quantities of culture media is always a tedious process and usually attended with unsatisfactory results. It occurred to me that many of the culture media might be dried and reduced to a powder containing all the requisite solid constituents which would remain indefinitely in an unaltered condition. Investigators who only have occasional use for culture media could prepare a stock on a workable scale, dry the medium, and then keep it indefinitely, weighing out sufficient quantities for a few tubes or plates as required. I therefore determined to inquire into the practicability of such a method of preparation, and have obtained the following results by using culture media which had been subjected to the process of desiccation.

The culture media under investigation were nutrient gelatin, nutrient agar-agar, nutrient beef broth, and MacConkey's neutral-red bile-salt lactose agar. These were all evaporated to dryness and when made up to their original volumes with distilled water, and dissolved at 100° C., were quite clear, the gelatin, agar-agar, and bile-salt agar solidifying with their original firmness on cooling. The reaction of the broth before drying, which was + 15 acid to phenolphthalein, remained unaltered after treatment.

The agar-agar, gelatin, and broth were each distributed into test-tubes and sterilised; they were then inoculated with several of the pathogenic, saprophytic, and chromogenic bacteria respectively and without exception vigorous and typical growths were obtained.

The neutral-red bile-salt agar was distributed in Petri dishes and allowed to dry in the usual manner and then inoculated on the surface with a mixture of Bacillus typhosus, B. coli, B. subtilis, and B. megatherium by means of a bent glass rod. No difficulty was experienced in rubbing the surface with the glass rod; in fact, the rubbing was performed a little more vigorously than necessary in order to test the texture of the medium, but it remained unbroken. After 48 hours incubation at 40° C. typical colonies of B. coli and B. typhosus had developed, the coli colonies being red and the typhoid colonies being colourless. The B. subtilis and B. megatherium had not grown. The foregoing experiments show that the typical reactions may be obtained with this medium after desiccation and that its inhibitory properties are in no way impaired.

Conclusion.—From the satisfactory results which have been obtained it appears that this is quite a practicable method of storing culture media, the results obtained by its use differing inappreciably from those obtained by using media stored in the moist form. The possible value of such a method to public health officers or travellers in the tropics will be obvious.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

LARYNGOLOGICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on May 6th, Dr. J. DUNDAS GRANT, the President, being in the chair.

The following were among the cases and specimens shown:—

Mr. HERBERT TILLEY exhibited a Penny removed from the Gullet of a young girl aged 14 years. It had lain 13 days just below the cricoid region of the œsophagus. The mucous membrane around the penny was very congested, and in parts slightly ulcerated. It was finally removed with difficulty with a Killian's long-toothed forceps. The patient left the hospital four days later.

Dr. H. J. DAVIS showed: 1. A case of Entire Excision of the Tongue in a man aged 45 years. The tongue was removed by Mr. D. J. Armour in 1909, and opinions were desired as to the possibility of adapting an artificial tongue. The patient is well, and speaks volubly, but is not easy to follow; he strangely pronounces "f" like "th," and speaks of his age as "thorty-thive." He cannot bite properly, and loses his food, as he never knows where it is in his mouth, but food or liquids go down the right way. (The general opinion of members was that a rubber tongue or plate was not very practicable.) 2. A man with a large Venous Angeioma implicating the Left Tonsil and Lateral Pharyngeal Wall; also a large Vascular Swelling on the Neck of the same side,

and evidently communicating with the former. When the patient lowers his head the tumours at once distend.

Mr. CHICHELE NOURSE showed a case of Epithelioma of the Larynx in a man, aged 69 years, 14 months after operation. A red growth occupied the anterior two-thirds of the left vocal cord. Thyrotomy was performed on Feb. 18th, 1909. The left vocal cord, ventricular band, and arytenoid were removed. Recovery was rapid. The patient remained well and had gained flesh.

Dr. STCLAIR THOMSON showed two cases of Radical Frontal Sinus Operation to show the conditions respectively 9 and 16 months after operation. Killian's method was carried out on the frontal sinus, and each patient also had an endo-nasal operation for suppuration in the ethmoid cells and maxillary antrum. The headaches have been, like all the other symptoms, entirely lost, and the patients now enjoy perfect health, never requiring a nose wash, as no trace of purulent discharge is visible in the nasal chambers.

The PRESIDENT showed: 1. A case of Infiltration of the Right Half of the Larynx of obscure nature in a woman aged 34 years. The swelling invaded the epiglottis and right aryepiglottic fold to the extent indicated, and a smooth, rounded, sessile swelling was also visible, apparently growing from the lingual surface of the base of the epiglottis. Hoarseness of three weeks' duration was present, but there were no physical signs in the chest. 2. A case of Odynphagia in a Tuberculous Subject, without any obvious disease of the larynx. The patient was a woman, aged 35 years. There were loss of voice and severe pain running up to the left ear during swallowing, and some ill-defined œdema on the outer surface of the aryepiglottic fold; otherwise the larynx was normal in appearance, as was also the movement of the vocal cords.

Dr. ARTHUR H. EVANS showed a case of New Growth, probably malignant, invading the right tonsil, soft palate, lateral pharyngeal wall, inner surface of the angle of the lower jaw, and adjacent portion of the tongue, in a man, aged 40 years. The case was shown to invite suggestions for treatment.

MEDICAL SOCIETY OF LONDON.

Ankylostomum Duodenale.

A MEETING of this society was held on May 9th, Dr. SAMUEL WEST being in the chair.

Dr. F. M. SANDWITH showed an interesting collection of lantern slides of Ankylostomum Duodenale, mostly taken from the published drawings and microscopic sections prepared by Professor A. Looss of Cairo. Anæmia due to the ankylostomum duodenale seems first to have been discovered in Europe among the miners of Anzin in 1802, though it was well known in Brazil so long ago as 1648. About the middle of the nineteenth century Dubini at Milan first recognised the worm itself; and very shortly afterwards Bilharz and others found the parasite to be very plentiful in Egypt and successfully proved there that it was the cause of "tropical anæmia." Until 1898 it was universally supposed that the larvæ of this worm, like most other parasites, entered man only by the mouth, but in that year Looss accidentally dropped upon his own hand in his laboratory a drop of water containing more than 1000 lively larvæ. Thereupon ensued redness and burning locally, and eventually anæmia and debility followed, and the eggs of the parasite were found in the fæces of the involuntary experimenter. He at once recognised the importance of this observation, but his belief was not shared by others, as it seemed too unlikely a thing to be possible that the larvæ should have entered his skin. He thereupon, after being cured of the infection, repeated the experiment purposely on another part of his hand, and was able to show the same local and constitutional results. His next experiment was to remove some of the skin as soon as possible after the death of a human patient, to warm it to 99° F., and to see if the larvæ would enter, but this they refuse to do because the skin became at once shrivelled. He then succeeded in applying a compress containing some larvæ to the leg of a boy aged 13 years one hour before the leg had to be amputated. It is needless to say that the boy had previously been examined and had been found to be free from this parasite. On examining the skin of the leg it was seen that the larvæ had penetrated the skin chiefly by the hair follicles, and so far as the compress had spread there was hardly a hair follicle free from the larvæ of ankylostomum duodenale. Photographs of the skin were shown by Dr. Sandwith at one of the British Medical Association meetings, but the possibility of skin infection met with no acceptance. A volunteer was then found whose fæces were examined for six weeks every day and invariably found to contain no evidence of eggs of the ankylostomum duodenale. On the forearm of this volunteer a drop of culture was placed, and he became infected so that the first egg was found in his fæces on the seventy-first day after the experiment. During the first month afterwards each specimen of fæces showed at least a dozen eggs and afterwards two or three dozen. Fortunately for the purposes of this experiment it is possible to make use of an analogous worm which infests dogs, the ankylostomum caninum. Looss carefully selected some puppies which were found to be free from disease, and applied to their skins a mixture of charcoal and fæces in which larvæ had been bred. The puppies died on the ninth day, and at the post-mortem examination anæmia was seen and many young worms were found in the duodenum, all immature and no adults, proving that the infection was recent, and practically the same result was achieved as when puppies had been fed on larvæ by the mouth. By cleverly infecting a series of puppies on three different days and then killing the puppies Looss was able to procure reliable sections of different stages of the disease, for the important thing was to know what happened to the larvæ after they had entered the hair follicles and how they succeeded in getting into the alimentary canal. After devoting some weeks of patient toil to this special investigation, Looss was able to prove that the larvæ, after entering the skin, got into the lymphatic vessels and later into the subcutaneous veins. Having thus entered the circulation, the larvæ were transported by the blood current to the right side of the heart, to the capillaries of the lungs, to the alveoli, to the bronchi, to the trachea, and to the larynx, where they wound themselves round the epiglottis and entered the œsophagus, stomach, and duodenum, which seemed to be their goal, for there they became sexually mature. Schaudinn confirmed this experiment on young monkeys and showed that the larvæ remained the same size from the time they entered the skin till they reached the lungs; as soon as they arrived at the air vesicles they began to grow rapidly. Dr. Sandwith assumed that the audience were perfectly well aware of the entry by the mouth and devoted his time to detailing the history of the discovery of the entrance of the larvæ by the skin. Dr. Sandwith laid emphasis on the importance of this discovery, which may have a far-reaching effect on the study of the entrance into man and the lower animals of parasites the life-histories of which are not yet elucidated fully.

In the absence of Sir Patrick Manson some slides of malaria cases were demonstrated by Dr. C. W. DANIELS, and Dr. W. CARNEGIE BROWN commented on some slides of tropical dysentery, after which the evening was concluded with a demonstration of microscopical sections of sleeping sickness cases by Dr. A. W. G. BAGSHAWE.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

Congenital Talipes.—Difficulties in Prescribing and Wearing Glasses.—Exhibition of Cases and Specimens.

THE last meeting for the session of this society was held on May 6th, Dr. J. B. HELLIER, the President, being in the chair.

Dr. ROBERT BEATTIE read a paper on Congenital Talipes. He complained that while other parts of the body had made advances, little or no progress had been made in the deformities of the human foot, and he considered that this was due to various and conflicting views as to the cause. Reasoning from the origin of the acquired form (excepting the paralytic) to the congenital, he looked on it as due to perverted nerve action, and he summed up by saying: "Talipes is due to a vicious nerve habit, initiated in utero, the result of maternal impressions in a highly sensitive mother;" that a nerve habit could only be overcome by persistent opposition; and that in opposition to the opinion of recognised

authorities operative measures and the use of irons were rarely required.

Mr. MICHAEL A. TEALE read a paper on Some Difficulties in Prescribing and Wearing Glasses. He pointed out that in many cases the estimation of refraction was difficult, partly because the methods available were not exact, and partly because the patients themselves happened to be peculiarly intolerant of the optical defects of lenses. After briefly referring to the three chief methods in vogue—namely, the shadow test, ophthalmometry, and the use of trial lenses—he emphasised the fact that it was often only by averaging the results of several different methods that the margin of error could be reduced to reasonable limits. Certain difficulties in connexion with each method having been pointed out, attention was drawn to certain faults in the making-up of spectacles which were capable of causing discomfort, even though the prescription for the lenses themselves was correct. The faults dealt with were chiefly those of unintentional decentering, both optically and geometrically, together with undesirable prismatic and astigmatic effects. Brief reference was also made to the modern types of periscopic and toric lenses.

Dr. E. O. CROFT showed a Uterus removed by Abdominal Hysterectomy for Fibroid Tumour which was undergoing "red degeneration." The woman, aged 40 years, had two children several years previously. Menorrhagia, pressure symptoms, and recently much tenderness had been present. There was a large parovarian cyst on the left side. The fibroid situated in the posterior uterine wall was spherical and on section its central portion showed deep red colouration which extended in a star-like manner towards the periphery. Microscopic examination showed some degeneration of the myofibromatous tissues together with thrombosis of the smaller vessels.

Dr. T. CHURTON showed:—1. A Tabetic Patient with pupils dilated, non-oscillating, and immobile in convergence; vision good; no optic atrophy. 2. A man, aged 40 years, with Paralysed Right Face and Arm. On April 22nd the orbicularis oculi was completely paralysed (seven days after sudden onset); it was now acting in conjunction with the left, but not singly. The leg was not paralysed. The patient could repeat quite clearly words and short phrases, but could not answer questions intelligently.

Mr. H. LITTLEWOOD showed specimens of (1) Appendix removed containing a large number of gun shot; and (2) Malignant Disease of the Appendix, associated with a large abscess.

Mr. B. G. A. MOYNIHAN showed a specimen of Nephrectomy for Tumour with Continuous Hæmorrhage showing disorganisation of the kidney due to a silk ligature.

Mr. H. COLLINSON showed the Ovary and Fallopian Tube with Torsion of Pedicle removed from a congenital inguinal hernia in a patient aged six months.

Mr. L. R. BRAITHWAITE showed an Hour-glass Gall-bladder containing stones in the proximal and muco-pus in the distal compartment, removed from a woman aged 40 years who for the last five years had been treated as a case of "neuralgia" of the stomach.

Cases and specimens were also shown by Mr. JAMES J. ANNING, Mr. H. SECKER WALKER, Dr. E. F. TREVELYAN, Dr. E. ALLAN WILSON, Mr. W. GOUGH, Mr. J. F. DOBSON, Dr. W. H. MAXWELL TELLING, and Mr. TEALE.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Nephrectomy.—Coxa Valga.—Ununited Fracture of the Tibia.

A MEETING of this section was held on April 22nd, Mr. JOHN LENTAIGNE, the President, being in the chair.

Dr. R. ATKINSON STONEY read an account of two recent cases of Nephrectomy. The first case was that of a man who was thrown from a bicycle on to his right shoulder; he was rendered unconscious for a few minutes, but was then able to go home. He remained in bed for about a fortnight suffering from a certain amount of pain in the right side, but it was not till he began to go about that he first noticed blood in the urine. He then went to hospital, where he was kept under observation for three weeks. During this time his urine contained large quantities of blood, which was found by Luys's segregator to come from the right side. At the operation the kidney was discovered to be torn almost in two at the hilum and the lower half was in a state of pulp. The second case was one of a girl who had been passing blood and tubercle bacilli in the urine for over six months. The urine was segregated by Luys's segregator on two occasions, and both times the urine from the right side was normal, while that from the left side contained blood, pus, and tubercle bacilli. At the operation the kidney was found to contain a small cavity (about one drachm of capacity) in the upper half, representing the base of one of the pyramids. Under the microscope the wall of this cavity showed general round-cell infiltration and masses of red cells, but no definite tubercles. No blood, pus, or tubercle bacilli could be found after the operation, though several examinations of the urine were made. Dr. Stoney commented on the curious discrepancy between the symptoms and pathological findings in the two cases.—Mr. SETON S. PRINGLE said, with regard to the second case, that he had had two cases of a similar nature, in both of which the kidney was exposed, and in neither was he able to demonstrate tuberculosis. Both patients made perfect operative recoveries, but one was still—18 months after the operation—complaining of pain and frequency of micturition, and passing some pus; while the other one, when seen two months ago, was in practically the same condition as before the operation, and was still passing purulent urine. He would suggest that in the case of the so-called tuberculous kidney it was the ureter that was chiefly involved.—The PRESIDENT said that if there was a condition in which the treatment by injection of tuberculin was really valuable it was in tuberculosis of the genito-urinary organs, especially the kidney. He had seen cases too ill for operation which improved to a wonderful extent, although the injections were carried out without being controlled by the opsonic index.—Dr. STONEY, in reply, said that against the idea of the ureter being involved was the fact that, although he did not remove any portion of the ureter, there was a complete cessation of all symptoms from the time of the operation. For ligatures he used catgut prepared by the iodine method, and had always found it sterile. He had found the segregator absolutely successful in many cases. In the use of it the position of the patient was important. If the patient was put sitting up in a gynæcological chair, so that the legs were nearly at right angles with the body, there was no possibility of urine passing from one side to the other, unless the bladder became over-distended.

Mr. SETON PRINGLE read a paper on Coxa Valga, with a report of a case associated with Ankylosis of Both Hips. He first dealt with the etiology, symptoms, and treatment of this rare deformity, and laid stress on the importance of expert skiagraphy in diagnosis. He then exhibited skiagrams and photographs taken before and after the performance of a subtrochanteric linear osteotomy on both femora. The case was complicated by ankylosis of both hips, due to arthritis caused by septic absorption from a large superficial burn, and yet the operation gave a quite satisfactory result.—The PRESIDENT said that the condition was a very rare one; its discovery was entirely due to the use of radiography.—Mr. A. J. BLAYNEY said that, in cases of congenital dislocation, the skiagrams seemed to show the neck as being a direct prolongation of the shaft.

Mr. WALTER C. STEVENSON reported a case of Ununited Fracture of the Tibia treated by Wiring. A skiagram taken four weeks after the injury showed a spiral fracture three inches long in the lower third of the right tibia and almost complete absence of bony callus. In spite of the mobility of the fragments, an attempt at reduction was only partially successful owing to the shortening of the muscles. The fracture was therefore exposed by a curved flap, which included the periosteum of the inner side of the tibia. When the broken surfaces were got into good apposition, after tenotomy of the tendo Achillis, both fragments were drilled in two places about an inch apart. Wires passed through the drill holes were crossed and tightened in front and then made to encircle the bone completely. The subsequent treatment consisted in an early use of the limb, supported by a removeable plaster splint which transmitted the weight of the body from the ground to the tuberosities of the tibia and which permitted of the parts being massaged. The progress of the formation of bony callus and the good

position of the fragments were verified by a series of skiagrams. In 23 days after the operation a fair amount of osseous tissue was apparent around the fracture, and about a month later the patient, wearing a boot with lateral steels, was able to resume his occupation.—The PRESIDENT said that the method of treating fractures by massage was good enough where there was no deformity; but where there were much deformity and no apparent attempt at union undoubtedly something had to be done like what Mr. Stevenson had carried out. He had been rather afraid that some harmful result would come in cases where he had used wiring circularly round the bone, but no harm had ever followed. He had recently treated a fracture of a girl's tibia by wire and plate. Suppuration followed, but he found that she had a habit of passing a hairpin down under the dressing when the surface itched. He cut down and removed the wire, and the girl walked about at once.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on May 5th, Mr. C. J. Jacomb-Hood being in the chair.—Dr. F. Hinds (Worthing) was elected President for the ensuing year.—Dr. Walter Broadbent showed a case of Right Hemiplegia in a child, aged 7 years. The onset had been gradual during the last six weeks. Double optic neuritis was present. There had been vomiting every few days; there was no headache. There was no deafness or history of ear disease. It was supposed that there was a subcortical tumour in the left parietal lobe.—Mr. H. G. Mallam showed a case of Leucoderma in a girl, aged 14 years. There was a small patch of white hair over the right ear; the middle half of the eyebrow of the same side, and the upper eyelashes were white. There was also an imperfect downward coloboma of the corresponding iris. The lower half of the right retina was paler than the rest. The white colour of the hair, &c., was supposed to have followed a stroke by lightning.—Dr. E. Rivaz Hunt showed a case of Osteitis Deformans in a man, aged 58 years. Up to 14 years ago he had excellent health, and was at that time 5 feet 3½ inches in height and capable of doing heavy work. Fourteen years ago he had influenza, and at about this time his bone trouble began. The legs were most affected, the skull not markedly, and the disease was steadily progressing.—Dr. A. W. Williams showed a case of Darier's Disease and sections of the Papules. The patient was a man, aged 39 years, and had been under treatment for six months, the disease having lasted for three years. His present condition was that dome-shaped, flat surfaced, discrete, hemp-seed shaped papules covered the greater part of the trunk, and were most marked in the middle line, both posteriorly and anteriorly. All treatment had failed to remove the papules, the only result being to plane down some which were acuminate and to remove some complicating pustular lesions. The sections showed: 1. Horny layer; here and there thickened plugs were seen to dip down into the rete and also to be elevated above the surface. The centre of the plugs consisted of a hyaline mass, the lower part of which was made up of imperfectly coalesced round bodies. 2. The granular layer was thickened under the plugs and contained a number of Darier's round bodies, which showed a slight affinity for acid stains. 3. The corium showed a slight infiltration of round cells in the neighbourhood of the vessels of the papillary layer below the region of the horny plugs. The intractable nature of the disease and its rarity were commented upon.—Mr. H. N. Fletcher showed a Pregnant Tube, in the outer third of which the ovum had developed, and from which the fœtus had escaped through the ostium abdominale, leaving a cavity lined by the shaggy chorionic membrane. Attached to the end of the tube was a peritubal hæmatoma about the size and shape of a duck's egg and with smooth fibrinous outer wall. The patient had been suddenly taken, during an attack of scarlet fever, with a severe pain in the left iliac fossa and rectum. Continuous loss of dark blood per vaginam followed this for the seven weeks she was in the fever hospital. Recurrent pains in the left iliac fossa and pain on micturition were present for the first fortnight, leaving a dull ache thereafter. There was no period of amenorrhœa. The initial pain occurred seven days after an entirely normal period.—Dr. F. G. Bushnell contributed a note on the Wassermann test for Syphilis and other diseases.—Mr. A. J. Hutchison read a paper giving notes of cases of Intracranial Complications due to Middle-ear Suppuration. (We hope to publish this paper in a forthcoming issue.—ED. L.)

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the Royal Infirmary on May 10th, Dr. W. Ward-Smith being in the chair.—Mr. T. Wilton Thew read a paper on Oral Sepsis considered from a Dental Point of View, as an introduction to a discussion on the subject. He said: This is a subject which demands the combined attention of doctor and dentist. As regards children, one of the chief things to be considered is the question of diet. Dr. Wallace insists on dietetic arrangements which will leave the mouth physiologically clean. After some teeth have appeared the food should be of a consistency such that it will demand the use of the teeth. The food should consist of, or at any rate include, substances of a hard and fibrous nature. Apples, crust, and even bone are excellent things to scour the teeth and jaws, and help to develop the bones and muscles of mastication. Dental caries is the principal cause of oral sepsis in children. The importance of having temporary teeth filled, and filled early, cannot be exaggerated, for the following reasons: (1) The smaller the decayed spot, the easier and more satisfactory it is to fill; (2) permanent teeth are more likely to be preserved if they come into a mouth which is free from caries and clean; and (3) decayed temporary teeth very readily produce alveolar abscesses. The first permanent (six-year old) molar is very apt to decay and causes the acutest suffering. In adults the study of oral sepsis is largely the study of pyorrhœa alveolaris. This is a chronic progressive destruction of the tooth socket, generally accompanied by the formation of pus. The cause is irritation of the gum margin, long continued and incessant. The deposit of tartar round the necks of the teeth is the usual form of irritation. No specific micro-organism has been discovered. The disease is accompanied by systemic symptoms, the chief of which are anæmia and various intestinal disorders. *Treatment:* Vaccine treatment is still *sub judice*, and so far has not given very satisfactory results. The principal point in the treatment is the removal of the tartar, and this requires care and patience. After scaling, a dental atomiser should be used with hydrogen peroxide. The teeth should be brushed with a simple chalk tooth-powder night and morning and after every meal. Systematic massage of the jaws and gums must be carried out. For advanced cases there is only one cure—extraction.—Dr. W. Wrangham opened the discussion from a medical point of view, and gave many instances of interesting cases due to oral sepsis.—Dr. A. Bronner pointed out that oral sepsis was very closely connected with diseases of the nose and throat, especially otorrhœa and antrum disease.—Dr. T. J. Wood did not agree with feeding children on hard substances, and he asked Mr. Thew why it was that dentists were so averse to extracting teeth when an alveolar abscess had formed.—Dr. Ward-Smith said it was appalling the number of children one saw with septic mouths.—Dr. A. C. F. Rabagliati, Dr. Taylor, Dr. H. J. Campbell, Dr. J. Metcalfe, Dr. F. W. Eurich, Mr. F. W. Goyder, and Mr. H. A. Mahony also spoke.—Mr. Thew then replied.

ASYLUM WORKERS' ASSOCIATION.—The annual general meeting of this association will be held at 11, Chandos-street, Cavendish-square, London, W., on Wednesday next, May 25th, at 3 P.M., when Sir William J. Collins, M.P., President of the association, will take the chair. The annual report will be submitted, officers elected, and presentations will be made of (1) medals for long and meritorious nursing service in asylums; and (2) an illuminated address to the President, and a testimonial to the honorary secretary in commemoration of the passing of the Asylum Officers' Superannuation Act. The Rev. Canon Sheppard, sub-dean of the Chapels Royal; Sir T. Clifford Allbutt, Regius professor of physic, University of Cambridge; Sir James Moody; Dr. F. Needham, Commissioner in Lunacy; Professor W. Bevan-Lewis, President of the Medico-Psychological Association; Mr. J. McD. Henderson, M.P.; and Mr. Charles H. Roberts, M.P., have intimated their hope to be present, in addition to members of the executive committee.

Reviews and Notices of Books.

Die Experimentelle Pharmacologie als Grundlage der Arzneibehandlung. Ein Lehrbuch für Studirende und Arzte. Von Dr. HANS H. MEYER, Wien, und Dr. R. GOTTLIEB, Professoren der Pharmacologie. Mit 61 Textillustrationen und 1 farbigen Tafel. Berlin und Wien: Urban und Schwarzenberg. 1910. Pp. 483. Price M. 12.

THIS excellent treatise on Experimental Pharmacology as the Basis of Therapeutics, or the treatment of disease by means of drugs—using these terms in their widest sense—is dedicated to two veterans—investigators who have left their mark on the progress of medicine, pharmacology, and therapeutics. Instead of dealing with the drugs themselves and their actions on the body, the authors have adopted the plan of taking the great systems of the body, and narrating the action of drugs on them somewhat in the following order: Pharmacology of the motor nerve endings, the central nervous system, sensory nerve endings, vegetative system, the uterus, the circulation, sweat secretion, temperature, antipyretics, and the causes of disease, which are dealt with by Professor Gottlieb; the pharmacology of the eye, digestion, respiration, urinary secretion, metabolism, muscles, blood, and inflammatory processes by Professor Meyer; 17 sections in all, with many subdivisions in each.

Dealing with pharmacology of motor nerve endings, Professor Gottlieb gives a full account of the constitution, actions, characters, mode of action, and applications of curare as a typical elective poison; and then he proceeds to consider other substances which have a similar action—e.g., certain ammonium bases, such as tetramethylammonium. Then he discusses bodies, such as guanidin, which, instead of paralysing these nerve endings, excite them. Drugs which act on the central nervous system may either excite or paralyse, or, to use the old terms, they are "excitants" or "sedatives," but they cannot cause qualitative changes. They, however, produce an endless variety of active symptoms, either coincident or successive, according to the sensibility of the several parts of the central nervous system. Strychnine is first taken as a typical drug which exalts the reflex excitability, more especially of the spinal cord. The reflex tetanic effect is due to the action of the drug on the receptive neurons, greatly increasing their excitability. This is not all, however: it sets aside as well some inhibitory apparatus in connexion with these neurons. It also increases the excitability of the central apparatus, the sense of vision and some other senses, and also the respiratory centre, and this is a most important practical factor in its use in certain diseases. It is rather remarkable that while the reflex excitability in the frog is increased for tactual stimuli by strychnine, chemical cutaneous and other painful stimuli, e.g., cutting, are without effect—i.e., the threshold is lowered only for certain stimuli, not for all. This is corroborative of the work of Sherrington on spinal reflexes. Finally, strychnine produces exhaustion and paralysis. Then follows a full account of its therapeutical applications, a general history of the bodies known as alkaloids, and a full discussion of other drugs which produce "spasms," either clonic or tonic—the latter discharged from the cord, and the former, the epileptic form, from the higher nerve centres.

A very full account is given of the actions of caffeine—which is pure excitant—and camphor, the marked effect of both on the nervous respiratory apparatus, and the valuable effects on the brain of such stimulants in the narcosis of chloral hydrate, paraldehyde, or alcohol. But both excitatory and depressory phenomena may occur as the results of the use of a drug, of which atropine is a typical example. The danger of scopolamine as a sedative or soporific, owing to its marked action on the respiratory centre, is pointed out. The morphine group is next thoroughly considered. Morphine is conspicuous amongst soporifics in this respect, that its pain-stilling qualities are specially marked. By its use it is not possible to reduce the excitability of the cerebrum and spinal cord to the same extent as can be done by narcotics of the alcohol and chloral group. These latter drugs first affect the cerebrum, then the cord, and lastly the respiratory centre. With morphine the diminution of excitability passes from cerebrum to the respiratory centre, while that of the cord is depressed to a very much less extent. Therapeutically morphine is especially useful for annulling pain; as an analgesic it diminishes pain with doses which leave unaffected the motor centres. Equally sensitive is the respiratory centre and the apparatus involved in coughing. It is primarily an analgesic, and for combating pain no other drug can replace it. As a soporific it must be given in larger doses. Its pharmacology and therapeutical applications are dealt with fully, yet tersely. Then follows a short discussion on morphinism and the actions of codeine, dionin, and heroin. The alcohol group is dealt with by Professor Meyer. Alcohol is a protoplasmic poison; its effects are least obvious on animals with a lowly developed central nervous system. Its so-called excitatory, stimulating, and paralytic effects are considered, and the final conclusion is reached that, apart from its toxic action, it can be regarded as a substitute for food, and as such can be used in disease.

Anæsthesia by inhalation and the volatile anæsthetics are next considered, and a careful comparison is instituted between the physiological and therapeutical actions of ether and chloroform. A very full account and analysis of the causes of death under chloroform, and of its remote effects resulting in degeneration of tissues, are given. The author alludes to the percentage of chloroform that need be present in blood to induce narcosis, and the very slight increase of this amount that may produce sudden death from heart failure. No such narrow margin obtains in ether narcosis. In view of the recent recommendations of a Royal Commission on the subject this chapter is of particular practical importance, and should be carefully studied both by surgeons and by those who have to administer volatile anæsthetics. Nitrous oxide and bromethyl are then dealt with, and next the hypnotics of the alcohol group are fully discussed, as are chloral and its allies, chloramid, isopral, paraldehyde, urethan, hedonal, sulphonal, trional, veronal, proponal, bromural, and others. The chapter is rounded off with the subject of "Theories of Narcosis"; and the researches of Overton on the part played by the solvent action of fats and lipoids on certain of these narcotics, and the distribution of chloroform in the several tissues of the dog during chloroform narcosis, as determined by the important observations of Nicloux of Paris, are naturally included. As the salts of bromide have some actions resembling the action of narcotics on the cerebrum they are next considered, and attention is called to the relatively large doses of these salts that are required to obtain a "favourable therapeutic action," and to the retention of bromine salts for a long time in the body, and the practical importance of both facts in the administration of these drugs. The subject of the sensory nerve endings necessarily leads to the study of local anæsthetics, to the effects of compression, anæmia, and the action of cold. A full and careful account is given of cocaine as an elective drug, which paralyses sensory nerve endings without any previous marked excitation of these endings. The many compounds of, and substitutes for, cocaine are alluded to, but only a few lines are given to stovaine, a brevity which just at this time is a little tantalising.

Professor Gottlieb retains the old term "vegetative nervensystem"—a term still used in Germany, but little used in this country—as opposed to the "animal" or "voluntary nervous system." It practically is identical with our term "involuntary nervous system," and includes the efferent nerve fibres passing to smooth muscle as well as those nerve fibres that supply the heart. He prefers to retain this term, and he calls "autonomic" only that part of the "vegetativen nerven" which does not take its origin from the sympathetic chain of the sympathetic neurons, a use of the word "autonomic" different from that intended by its sponsor, Professor Langley, who first used the term. This definition naturally leads to the consideration of the actions of a vast number of drugs, such as nicotine, ergotin, adrenalin, artificial cholin, muscarin, pilocarpine, &c. For the ophthalmic surgeon there is a specially useful review of the action of drugs on intra-ocular pressure, while for the gynæcologist at a later stage there is an admirable chapter on the uterus. Over 40 pages are devoted to the digestive system, including both digestion and absorption. When absorption of drugs takes place from the rectum they produce their effect rapidly, because when so absorbed they pass directly into the hæmorrhoidal plexus to the hypogastric vein, entering the general blood stream without traversing the vena portæ and the liver. Emetics and purgatives and allied drugs come into this chapter. Magnus has shown by the X ray method that morphine has a remarkable retarding effect on the emptying of the fundus of the stomach; food may remain 8, 12, or 24 hours in the stomach. Hence it is inadvisable, because of the fermentative processes that ensue, to administer this drug in motor inefficiency from pathological causes—e.g., catarrh or ulcer of the stomach. To the circulation over 80 pages are devoted. There is an excellent *résumé* of the main physiological points to be noted in the heart and blood-vessels, and the whole question of cardiac remedies and poisons (extra-cardiac and intra-cardiac) is fully gone into, and again the pre-eminent position of chloroform as a cardiac depressant, as studied in the excised heart of a frog, is emphasised. As a paralysant of the heart its toxicity exceeds that of bromethyl 12 times, ether 48, and alcohol 132—i.e., the molecular concentration of these drugs must increase in these ratios to obtain the same action as chloroform on the isolated frog's heart as determined by Diebella. Camphor as an excitant of the first order in acute cardiac failure is strongly recommended. A full account is given of the action of alcohol on the heart and of adrenalin and digitalis; caffeine is said to exert its chief influence on the circulation through the vasomotor centre. As to vaso-dilators, of which amyl nitrite is the type, there is a full, practical, and commendable account.

We have not the space to accompany the authors in their equally lucid, practical, and scientific account of the pharmacology of the other systems enumerated at the beginning of this review, but we would draw particular attention to the last chapter (Chapter XVII., pp. 419–483) on antiseptics, anthelmintics, and specific "disinfectants"—e.g., quinine and its action on the lower protoplasmic beings and on the organism of malaria. This chapter also deals with the drugs employed—alas unsuccessfully—against trypanosomes, with the action of salicylic acid in rheumatism and of mercury in syphilis, and lastly, with the whole question of serum therapeutics, toxins, antitoxins, immunity, and the treatment of diphtheria and tetanus by specific sera.

We have great pleasure in commending this attractive, scientific, and practical treatise to the consideration of pharmacologists, physiologists, and practitioners; and we hope that ere long, both in this country and in America, it may be presented to those who unfortunately do not read German easily, in the form of an English translation, preferably by one who himself is both a pharmacologist and a practitioner of medicine.

An Elementary Manual of Statistics. By ARTHUR L. BOWLEY, M.A., Reader in Statistics, University of London. London: Macdonald and Evans. 1910. Price 5*s.* net.

Mr. Bowley's book supplies just the kind and amount of information that is required in an elementary treatise on statistics. Clearly and concisely written, as befits the work of a university teacher, it deals in masterly style with some of the more difficult problems that perplex the beginner whose mathematical equipment is not of the best. The book should certainly be in the hands of every public health officer, and it may confidently be recommended, perhaps in preference to the more advanced manual by the same author, as a text-book for the use of students of medicine who are candidates for diplomas in public health. It has been compiled for the needs of those who desire a useful practical acquaintance with statistical methods and results without the necessity of undertaking mathematical analysis, and is designed as a first course in statistics for students intending to proceed further with the science.

The subject matter is arranged in two parts. The first part deals with elementary methods and with such technical terms and ideas as are indispensable in the handling of numbers on a large scale. In the second part, which is intended as a guide to official statistics, the origin of many of these is shown, their adequacy is criticised, and some of their more important results are discussed. But one of the principal features in this volume of not more than 210 pages is the inclusion of a valuable series of lessons, some of which are apparently original, on the various applications of the subject. In these the author has taken pains to discriminate between the right and the wrong use of statistics, as well as to discourage the piling up of irrelevant tables and the construction of merely pictorial diagrams—a practice which sometimes leads to erroneous and even mischievous conclusions. Among the chapters in Part I. which relate to the general principles of the science, those treating of the nature of published statistics and the rules for their use are deserving of particular attention. The chapter on accuracy and approximation is also full of instruction, and so is the chapter dealing with the modern methods of statistical analysis. In Part II. the author's weighty remarks on the population census will repay careful perusal, especially in view of the next enumeration in April, 1911. The chapter on vital statistics, although short, is replete with useful hints for the official guardians of the public health who are charged with the duty of reporting on the local prevalence and fatality of the various kinds of disease. In his remarks on the many problems concerning sickness and mortality which naturally come within the province of medical officers of health it is gratifying to notice the author's willing testimony to the effect that "in many districts these officers present admirable annual reports, tackling the questions of most importance in their localities with statistical and professional skill."

Very interesting and instructive are the author's remarks on the application to particular cases of the general principles laid down in his earlier pages. Commenting on the risk of errors in definition which pervade the science of statistics, errors which may affect the apparent death-rate from any cause, as well as the rates of "morbidity" and of "case fatality," he points out that these may arise (1) from intrinsic difficulty of classification and incomplete "standardisation of description"; (2) from unconscious personal bias in the practitioner; (3) from the presence of

two diseases together or of a disease and an accident; or (4) from the desire to avoid mention of the existence of such a disease as, e.g., alcoholism. In almost all vital statistics the risk of *spurious accuracy* is considerable. "In the practical question," he continues, "as to whether one rate is greater than another, after the classes concerned have been made similar, there remains natural variation; if all known circumstances were the same, differences would still be found. All records of births, deaths, marriages, sickness must be regarded as *samples*: the greater the number of persons the more accurate the averages obtained from the sample. The only non-mathematical test of this accuracy is the test of subdivision" ..... "a great number of differences that are remarked on prove, on mathematical examination, to be only the result of chance variation, and to be no more remarkable than, say, the throwing of double dice twice in succession." In the author's opinion there is much to be said for the establishment of a medical mathematical office, to which statistical data could be sent for examination, just as bacteriological tests are made. The useful and suggestive chapter on vital statistics is concluded by showing that it is only when approximate constancy is attained over a series of observations, as in the case of the general birth-, death-, and marriage-rates, that statistics can properly be applied to the elucidation of problems and the tracing of cause and effect.

Many of our readers have been interested by the excellent paper of Dr. J. M. Troup and Mr. G. D. Maynard upon modern statistical methods, which we published last week. We therefore know that there is growing up among medical men a feeling that the study of mathematics is playing a more intimate part in medicine than heretofore. We ourselves feel that this is the case, and have pleasure in commending Mr. Bowley's book to what should be a large and growing class of readers.

Traité de l'Alimentation et de la Nutrition à l'Etat Normal et Pathologique. Par le Docteur E. MAUREL, Médecin principal de réserve de la Marine; Professeur à la Faculté de Médecine de Toulouse. Troisième volume: Ration de la grossesse, de l'allaitement et du travail; Influences qui modifient toutes les rations; Indications pratiques sur les aliments d'origine animale et végétale. Paris: Octave Doin et Fils. 1909. Pp. 700. Price 14 francs.

THIS is the third and concluding volume of the author's treatise on Alimentation and Nutrition in Normal and Pathological States. In studying the needs of the woman during the periods of pregnancy and lactation by means of the observation of pregnant animals he has been able to determine that there exists a very definite relation between the amount of food taken by the mother and that required for her own nutrition and that of the fœtus. With regard to lactation, for example, he concludes that the nursing mother, besides the amount of nutrition requisite for her own needs, as a rule consumes an amount of food exactly equal to that required by the fœtus after it is first weaned. The precise amounts required will naturally vary in individual cases, but as to the correctness of the principle the author has no doubt.

The researches which Professor Maurel has carried out on the influence of climate and the seasons on the needs of the organism form a very useful basis for the next section in this volume, which deals with the influence on nutrition of the temperature of the air. In relationship to this he has investigated also the effect of altitude. The influence produced by work, both physical and intellectual, is next considered, and in this study much assistance has been derived from the researches of M. Lefévre and M. Fleury. After the section dealing with the effect of work, the influence of the winds, the clothing of the body, and the character of the habitation are discussed in detail. As a result of these studies not only can the actual needs of the human organism be determined, but the exact quantities of the various substances, both mineral and organic, necessary to satisfy these needs can, the author holds, also be arrived at.

The second part of this volume is concerned mainly with a very detailed study of numerous articles of food and varieties of diet. In these chapters the author has given a precise account of the modifications produced in different foods as a result not only of their preservation, but also of the preparation they undergo before they are taken into the body. This represents a very large amount of work, for not only are all the substances derived from the animal kingdom considered, but also all those of vegetable origin. In this part of the work the author gives for each article of food considered, whether animal or vegetable, its composition, its waste constituents, the quantity which corresponds to the needs of the various tables of diets, the modifications produced by the different methods of preparation, and lastly, the nutritive value of each portion so prepared. In order to bring to a practical point his researches Professor Maurel has also added a section in which he deals with the dietary needs of various communities such as schools, the army, the navy, prisons, and restaurants.

In conclusion, he surveys the alimentation of France from the economic point of view, taking into account the nutritive and commercial value of the various foodstuffs produced. As a result of his investigations he furnishes some indications upon the needs of the country, upon the foodstuffs which are best able to satisfy those needs, and lastly, upon the relations existing between the nutritive values of these foods and their commercial value to the producer. The whole treatise forms a work of great interest and of great value, and we congratulate the author upon the termination of his labours and upon the excellence of the work he has done.

Preparatory and After Treatment in Operative Cases. By HERMAN A. HAUBOLD, M.D., Clinical Professor in Surgery and Demonstrator in Operative Surgery, New York University; and of Bellevue Hospital Medical College, New York, &c. With 429 illustrations. London and New York: D. Appleton and Co. 1910. Pp. 650. Price 25*s.* net.

RECENT methods employed in surgery require an elaboration of technique utterly unknown even a few years ago, and this very elaboration, while primarily imposing greater responsibility on the surgeon, also requires that all those who assist in the care of the patient before, during, and after the operation should be well acquainted with the principles which govern modern practice. In hospital work this is generally easily managed, but when the surgeon has to operate in a private house it may be difficult to ensure that the practitioner to whom much of the after-treatment will fall is thoroughly conversant with the latest developments of surgical ritual. Dr. Haubold has written this treatise chiefly with the object of educating the general practitioner in the methods commonly used by surgeons at the present time, and he has gone far to achieve success in this matter. It is hardly necessary to say that there can be no such thing as perfection in the writing of a book like this. Every surgeon has his own methods and lays stress on some points which may appear to other surgeons trivial and unimportant. If a surgeon meets with an assistant versed mainly in methods other than his own, he is likely to be dissatisfied, and in the same way any book on the subject of

surgical technique is sure to be found wanting in some details by every expert reader.

On the whole, little has been omitted that should have been inserted, and we approve of most of the advice given, but we must confess that there are at least a few points in which we think directions given are unwise. There is always a tendency to over-elaborate any method employed, and therefore, though we cannot definitely say that any of the procedures advised to attain asepsis is absolutely unnecessary, we think it important to point out that the employment of an unnecessarily elaborate technique is likely to defeat the very object for which it has been devised. When the student and others who have to assist at operations are told that every step in a complicated course of procedure is absolutely essential for the attainment of asepsis, there is no little risk that that very elaboration will dishearten them, when they will fail to reach a degree of asepsis which was easily within their power. The essentials should be taught; the less essential points, if mentioned at all, should be clearly described as merely addenda desirable when possible. We have no intention of going through this work and pointing out where we think the author has over-acted his part, but we will mention one case at least. He advises that the surgeon before performing an operation should disrobe completely and dress himself in a canvas or duck suit, consisting of loosely-fitting trousers held in place by means of a draw-string at the waist, and a sleeveless blouse tied with tapes in front. Over this, of course, aprons are worn. Now, we have not the faintest wish to attempt to depreciate the value of cleanliness in operations; we hold firmly to all the tenets of the creed of asepsis, but we must be allowed to express the opinion that such a radical change of clothing is quite unnecessary. Perfect results are obtainable, and are obtained, with fewer precautions than these, and we cannot doubt that the definite advocacy of such precautions tends to defeat itself.

The book is very fully illustrated—in fact, we may say that many of the illustrations are absolutely unnecessary. Nowadays, illustrations reproduced from photographs are very cheap, and within the last few years there has been no little tendency to overdo the introduction of these illustrations. For instance, gauze pads, "sponges," or "wipes," as the author calls them, are of great value in operations, but we think that nine illustrations, four of which occupy nearly two-thirds of a page each, are hardly needed. Still, the book well serves its purpose of giving instruction in the methods of modern asepsis, and success in so laudable an object justifies the lack of a sense of proportion which we find in its compilation.

Food Inspection and Analysis. By ALBERT E. LEACH, S.B., Chief of the Denver Food and Drug Inspection Laboratory, Bureau of Chemistry, U.S. Department of Agriculture; formerly Chief Analyst to the Massachusetts State Board of Health. Second edition, revised and enlarged. New York: John Wiley and Sons. London: Chapman and Hall, Limited. 1909. Pp. 954. Price 31*s.* 6*d.* net.

IN the matter of food laws the United States of America have taken perhaps the most drastic course of any civilised country. In June, 1906, the new national food law was passed, which not only regulates commerce in foods between State and State, but controls also their manufacture and sale and their importation from foreign countries. The Act is particularly stringent in regard to imported foods and to substitutes and preservatives. It requires above all things an honest label. Opinions differ as to whether this law presses too severely in many directions, and certainly complaints have been numerous as to the hardships which it is calculated to inflict upon manufacturers of certain classes of foods. The Government, however, have adopted a firm attitude, and the Act continues in operation without any serious amendments having been made. It is a great legislative experiment, and its results are being watched very carefully, and equally by public health authorities and by the industries concerned. The step has necessarily thrown upon the analyst an increased responsibility and an increased activity. He has had to follow carefully the standards laid down, and he has had to make himself familiar with all new methods of analytical procedure adapted to the new legislative requirements.

The first edition of Mr. Leach's authoritative work was issued in 1904, and a review of this edition appeared in these columns in October of that year. The great movement in favour of a stronger system of food control in the United States was consummated after the work was issued, and this fact has called for a second edition, which should deal with the new standards adopted, and with the new and improved methods of analysis which progress has substituted for many old ones. The book in its present form deals with a wide variety of subjects included in analytical procedure, and many analysts in this country will read with interest the sections on meats and meat extracts, flour (including methods for the detection of bleaching), the analysis of potable spirits, tea, coffee, cocoa, ice-cream, and the methods for detecting and estimating preservatives. There are instances, of course, which are clearly only applicable to United States laws, but in spite of that fact the book is certain to find a wide patronage in this country because its analytical chemistry comprises methods of accuracy and precision which have received endorsement by the author's own careful practical work.

Fifth Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. Edited by JOSEPH WALSH, A.M., M.D. Philadelphia: Published by the Henry Phipps Institute. 1909. Pp. 463.

IN this volume is given an account of the general and special clinical and pathological work carried out by members of the staff at the Henry Phipps Institute during the year Feb. 1st, 1907, to Feb. 1st, 1908. In addition to a large mass of statistical information in reference to tuberculosis, several special lines of research are recorded, all of which are of considerable interest. Dr. W. D. Cadbury gives the results of the examination of the bone marrow in cases dying from pulmonary tuberculosis. The study of the marrow was mainly confined to the long bones, although in some cases that of the ribs was examined. The marrow was usually red and soft, and microscopically showed cellular proliferation; a peculiar transformation called mucoid appeared in some of the cases. Proliferated marrow was found most frequently in the femora, and less often in the humeri. In cellular marrow the myelocytes were usually the predominant type of cell; next in numbers came the lymphocytes and polymorphonuclear leucocytes. A few eosinophiles and marrow giant cells were usually found in cellular marrow, together with many nucleated red cells. In about half the cases tubercles were found in the bone marrow, and with especial frequency in the femora. An interesting coloured plate is given, showing the presence of tubercle bacilli in the marrow.

From a clinical point of view a paper by Dr. C. M. Montgomery on Tenderness in Pulmonary Tuberculosis, especially Percussion Tenderness, is of some interest. The author is of opinion that circumscribed tenderness at an apex, especially if it persists, strongly suggests tuberculosis.

Given tenderness at an apex we agree that it is at least necessary to show that the tenderness is not due to tuberculosis. Dr. Montgomery considers that tenderness, especially if marked, is more common over acute lesions, but that it may occur over lesions a long time healed, and that it may be absent over acute lesions even of the pleura. He further points out that circumscribed percussion tenderness in pulmonary tuberculosis usually depends on disease of the pleura or lungs; but, in his view, the tenderness itself may actually reside in the tissues of the chest wall as well as in the pleura itself (or in the tissues immediately external to the pleura), and apparently may occur in normal tissues. While all the tissues of the chest wall down to, and possibly including, the parietal pleura may be tender, the muscles appear more often tender on percussion than the other tissues. This tenderness may be due to a myositis or to neuritis of the nerves in the tender muscles.

A report by Dr. J. Douglas Blackwood upon the opsonic index in pulmonary tuberculosis is inconclusive. An attempt was made by him to regulate the dosage of tuberculin by this means, but as the patients visited the dispensary and were not in-patients, a sufficient number of observations could not be made. The effects of auto-inoculation would also render such tests unreliable.

The present volume contains much that is interesting, and for purposes of reference will prove valuable.

Radium-therapy. By Dr. LOUIS WICKHAM and Dr. DEGRAIS. Translated by S. ERNEST DORE, M.A., M.D. Cantab., M.R.C.P. Lond., with an Introduction by Sir MALCOLM MORRIS, K.C.V.O. London: Cassell and Company, Limited. 1910. Pp. 306. Price 15*s.* net.

IN a previous issue[1] it was our pleasure to make favourable comment on the excellent work in the field of radium-therapy done by Dr. Wickham and M. Degrais, as set forth in the original French edition of their classic volume, while an interesting development in regard to injections of solutions of radium is related by them in a paper at p. 1400 of our present issue. In the book now before us we have all the contents of the original presented to us in our own language, with the additional advantage that the authors have added new facts that have been discovered since the MS. of the original edition was finished in March, 1909. It is thus quite up to date, and will be appreciated by many whose knowledge of the French language is somewhat less than that of their own. The translator is to be congratulated on the excellence of his part of the work. Sir Malcolm Morris has written an introduction in which he pays a well-deserved tribute to the labours of Dr. Wickham, while the latter has provided a preface specially for the English edition. The excellent coloured plates and other illustrations which characterised the French edition are here reproduced in all their good qualities. Being the classic work on the subject, it should be in the hands of those medical men who try to keep pace with modern developments.

Surgical Diagnosis. By ALEXANDER BRYAN JOHNSON, Ph.B., M.D., Professor of Clinical Surgery in the Columbia Medical Schools, Attending Surgeon to the New York Hospital, Visiting Surgeon to the Mount Moriah Hospital, &c. With one coloured plate and 257 illustrations with the pen. London: V. Appleton and Co. 1909. Vol. I., pp. 810; Vol. II., pp. 777; Vol. III., pp. 810. Price £3 15*s.* net.

DIAGNOSIS cannot be learnt from books; it is only in the wards, in the out-patient department, and in the frequent seeing of cases, that the student can learn the most difficult art of diagnosis. Yet, though books cannot serve in the place of clinical experience, they may go far in assisting the student and in making him appreciate the value of the cases he sees. This book is an elaborate treatise devoted mainly to the diagnosis of surgical conditions, for but little is said as to the treatment. The arrangement is mainly regional, the diseases and injuries of the different parts of the body being considered separately, but special chapters are devoted to certain subjects, such as gangrene and gunshot wounds. Many illustrations are given, and in nearly every case they show clearly some morbid condition, though here and there we find some illustrations of but little practical value. A few points have struck us in the work which are, we think, worthy of mention. We are pleased to see that the author ascribes but little importance to the ribbon-like form of the motions in cancer of the rectum. Most of the text-books still state that this is a diagnostic point; we entirely agree with Dr. Johnson that it is a sign of practically no value. We think the three pages and a half devoted to the parathyroid gland are rather a waste of space. In the account of rodent ulcer the author does not seem to be sure in what structure the growth usually arises, though practically all pathologists are agreed that in the vast majority of cases, if not in all, it arises from the cells of the sebaceous glands. The section dealing with the blood in septic diseases is admirable, and indeed all who use the book as an adjunct to the work in the wards and out-patient department will derive much benefit from it.

[1] THE LANCET, Sept. 25th, 1909, p. 929.

LIBRARY TABLE.

Botany. By J. REYNOLDS GREEN, Sc.D., F.R.S., Downing College, Cambridge. Illustrated. Pp. 128. Price 1*s.* net. *Biology.* By R. J. HARVEY GIBSON, M.A., Professor of Botany in the University of Liverpool. With numerous illustrations. London: J. M. Dent and Co. 1909. Pp. 120. Price 1*s.* net.—The Science Primers, which were first published 30 years ago by Messrs. Dent and Co., served an excellent purpose in their day. They aimed at representing in simple language and in an elementary or introductory manner the condition of our knowledge of the several sciences at that period. But science has advanced greatly since then; facts have been discovered, observations have been re-interpreted, new theories have been formulated, and old ones amended or discarded altogether. Moreover, research on the border-lines between the various sciences has obliterated the hard-and-fast boundaries at one time supposed to exist, while the vast accessions to knowledge have necessitated extensive subdivisions of many of the sciences. It would seem, therefore, that the time has come when a re-statement of the fundamental theories of the several sciences should be undertaken, more especially in view of the great advances that have been made in recent years in scientific education and of the spread of a desire for knowledge of scientific subjects among the general public. Messrs. Dent are issuing a new series of primers which will be useful for all readers who desire a simple and general, but accurate, knowledge of scientific subjects, and which will afford adequate assistance to primary and secondary teachers who have not been able to make a special study of science at all, or whose knowledge may extend to one or two branches only. In issuing this new series of primers the editor, Dr. J. Reynolds Green, F.R.S., follows out this idea and has secured writers of high rank in science for the first seven volumes, the three volumes dealing with Biology, Botany, and Chemistry being now ready. In the preface to the manual on Botany Dr. Green makes it clear that its object is to present the plant as a living organism, and this has been done most admirably,

although, perhaps, morphology, with which a beginner more easily becomes acquainted, has been to some extent crowded out by histology. The description of the flower is rather insufficient. The evolution of plants is very well described; a table of stages of development would add to its value by collecting the information. The illustrations are good and well selected. Professor Gibson's volume is a brief sketch of the science of biology and serves as a useful introduction to further studies in the same field. Numerous examples of its processes are given and these are very happily chosen, usually a plant and an animal being considered and contrasted at the same time. The illustrations are clear and sufficient. Altogether the work shows clearly where biology stands at the present time. It is to be regretted that there is no index to either book.

A Winter's Comedy. By HALLIWELL SUTCLIFFE. London: T. Werner Laurie. Pp. 310. Price 6*s*.—In some medical examinations it is the custom to give a "case for diagnosis." In the novel before us Mr. Sutcliffe has given us such a case, and it is this. A young and perfectly healthy woman, except for "a cold," goes hunting on a fine January morning. She and her companion are, together with the huntsman, alone with the hounds. A moorland fog comes down and they wait half an hour. The young woman shivers. The fog lifts and they go to a farm half a mile away. She shivers again and is put to bed. About an hour or two later the medical man who has been summoned arrives, and pronounces his patient to be in a condition which is "grave, of course, very grave." He saw her three times next day, and by 10 o'clock at night was able to say, "with subdued glee, 'She'll live, gentlemen.'" This illness, we learn, is pneumonia, a condition which the medical man diagnoses on his first arrival. And all honour to him, for the rapidity of onset, exacerbation, and resolution in this case, which seems to have been all over in some 30 hours, was remarkable, and might have baffled the highest powers of diagnosis. For the rest we may say that the novel is readable and ends in the orthodox happy manner.

The Birds of the British Islands. By CHARLES STONHAM, C.M.G., F.R.C.S. Eng., F.Z.S. With Illustrations by LILIAN M. MEDLAND. In 20 parts. London: E. Grant Richards. 1909. Price 7*s*. 6*d*. each part.—The sixteenth part of Mr. Stonham's sumptuous history of British birds contains, among others, accounts of the sandpipers, redshanks, and godwits, none of which birds are likely to be familiar to many of our readers. The high standard of the previous issues is well maintained and the illustrations are admirable—indeed, it is wonderful how Miss Medland has managed to make her faithful gradations of light and shade take the place of colour. A particularly full description is given of that interesting bird the ruff, the pugnacious habits of whose males during the pairing season have earned for the genus the name "machetes." "In former times," we are told, "the ruff and reeve bred freely in suitable parts of the eastern counties of England from Northumberland southwards, but now they are, with very rare exceptions, merely spring and autumn visitors on passage." The extinction of the ruff in such counties as Lincolnshire and Norfolk was doubtless due to the drainage and reclamation of the marshlands, and it is sad to know that the improvement of the countryside must lead to a decreasing number of indigenous birds. The ruff, according to Mr. Stonham's interesting account, behaves in his amatory affairs like the typical wicked man in melodrama. He shows extraordinary keenness to obtain possession of the quaintly named female, the reeve, but his object once attained he soon tires of his selected partner and exhibits callous indifference to her charms. The redshank is another bird which used to breed frequently in England, especially in Norfolk, but drainage and reclamation have destroyed the haunts which it most affected. The recurrence of this note of regret for the loss of one more native species causes the suggestion that at the end of his big work Mr. Stonham might well publish a list of the birds which, say 50 years ago, certainly bred in these islands, but which do so no longer; and to this list there might be added another, mentioning the birds which we have gained during the same period.

JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XL., Nos. 1 and 2. London: C. F. Clay, Cambridge University Press Warehouse. April 26th, 1910. Price 8*s*.—The contents of these numbers are: 1. A Contribution to the Study of Muscle-enzymes, by Fred. Ransom, from the Pharmacological Laboratory, Cambridge. Dr. Ransom's experiments show that it is possible to prepare from frozen muscle a plasma containing a ferment or ferments capable of converting glucose or glycogen into lactic acid, CO_2, and alcohol. The fermentation begins in the case of frog's plasma at once, or at most within ten minutes after the exposure of the preparation to a temperature of from 15° to 32° C. In the case of the fowl plasma there is a delay of less than an hour. By precipitation with alcohol-ethers a powder is obtained from the plasma which acts like the plasma itself, but more slowly. Lactic acid appears to precede the formation of carbon dioxide in the process of fermentation in muscle plasma. 2. On the Exhalation of Drugs by the Lungs, by Arthur R. Cushny, from the Pharmacological Laboratory, University College, London. The conclusions at which the author of this paper arrives are that the exhalation of volatile substances from the lungs is exactly analogous to their evaporation from solutions in water, and the pulmonary cells seem to be purely passive in the process. The amount of any substance which is eliminated by exhalation is dependent, not so much on its volatility as measured by the boiling point, as on its miscibility with water and its chemical affinity with water. The less the solubility and the feebler the affinity the larger the amount exhaled. 3. Flexion Reflex of the Limb, Crossed Extension Reflex, and Reflex Stepping and Standing, by C. S. Sherrington, from the Physiological Laboratory, Liverpool. This is a carefully drawn up account, illustrated by numerous diagrams, of the reflex stimuli and inhibitions of the muscles engaged in standing, stepping, and reflex movements of the limbs in the cat and dog, with and without removal of the brain and division of various nerves. 4. Fatty Acid Metabolism in the Liver: (1) A Method of Fatty Acid Extraction, by V. H. Mottram, Fellow of Trinity College, Cambridge. These numbers also contain the Proceedings of the Physiological Society for Feb. 19th, 1910.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., ALEXANDER MACALISTER, ARTHUR THOMSON, ARTHUR KEITH, and ARTHUR ROBINSON. Vol. XLIV. Third Series. Vol. V., Part III. April, 1910. London: Charles Griffin and Co. Annual subscription £1 1*s*., post free.—The following articles are contained in this part. 1. Notes on the Development of the Human Sphenoid, by Professor Fawcett of the University of Bristol, with 16 woodcuts. 2. The Architecture of the Cancellous Tissue forming the Upper End of the Femur, by Professor A. Francis Dixon, Trinity College, Dublin, with one plate. 3. The Pituitary Fossa and Certain Skull Measurements, by D. P. Fitzgerald, B.A., M.B. R.U.I., professor of anatomy, University College, Cork. 4. The Arrangement of the Fibres of the Middle Cerebellar Peduncle as shown by Dissection, by E. B. Jamieson, M.D. Edin., lecturer on anatomy, University of Edinburgh, with three excellent figures in the

text showing the disposition of the fibres. 5. Case of an Abnormal Sinuous Aorta, by John L. Annan, M.B. Edin., demonstrator of anatomy, University of Sheffield. 6. Two Cases of Reduplication of the Arteria Cerebri Posterior, by C. Gordon Shaw, M.B., B.S. Melb., senior demonstrator of anatomy in the University of Melbourne. A very rare abnormality of which a woodcut is given. 7. The Presence of Lacrymo-jugal Sutures in Two Human Skulls, by D. G. Reid, M.B. Edin., demonstrator of anatomy in the University of Cambridge. A suture of rare occurrence, only existing in 2 out of 4500 skulls in the Cambridge anatomical department, though common in many animals When present in man it is always met with in the skulls of the higher races. 8. Description of a new Craniometer and of certain Age-changes in the Anthropoid Skull, by Arthur Keith, M.D. Aberd., F.R.C.S. Eng., conservator of the Museum of the Royal College of Surgeons of England, with nine woodcuts in the text. 9. The Limb Arteries of Primates (Part I.), by T. Manners-Smith, M.A., M.B. Cantab., demonstrator of anatomy in the University of Cambridge, lecturer on anatomy in Downing College, with six plates.

L'Hygiène. Revue Mensuelle Illustrée. Vol. I., Nos. 5 and 6. Paris and London: Goupil et Cie. Price 2 francs 50 centimes.—The April and May numbers of this excellent magazine maintain the position foreshadowed by the earlier issues. The article which perhaps will be read with the greatest interest is one by Dr. George Baudouin, physician to the Hospital Alphen-Salvador, in the April number describing the Association de l'Assistance. This article practically describes the rise of professional nursing in France; and this to a certain extent is a recent story, for the first body having the improvement of nursing as its aim, the Association à Développer et à Perfectionner l'Assistance aux Malades, was not formed until the close of the year 1899. The first installation of the Association de l'Assistance, to abbreviate its title, was in some rooms in the Rue Garancière and dates from January, 1900. This was a school of instruction for nurses and opened with a single pupil, but as the *clientèle* grew larger it became necessary to find new quarters and migration was made to the Rue Amyot, a street in the quarter of Paris behind St. Geneviève. In this building the association has developed its programme, which now, to give a broad translation, is formulated as follows: (1) To furnish for those who can pay competent nurses possessing proper guarantees of character and technical knowledge; and (2) to furnish for the sick poor in their homes or in any institutions gratuitous nursing with similar guarantees. The whole story of the development of the movement is excellently told by Dr. Baudouin, and all interested in the practical side of nursing should read the article. Other communications are a denunciation, strengthened by excellent reproductions of microscope slides, of the household fly by Dr. Vaillard, and a note on the ultra-violet rays in the sterilisation of drinking water by Professor Nogier.

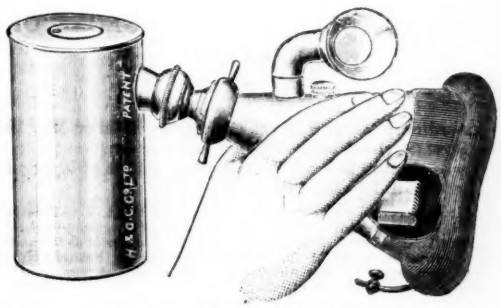
The Burlington Magazine.—The May number of this magazine contains among other things four admirable reproductions of the Budapest Rembrandts. An interesting article entitled "The Educational Aspect of Irish Chippendale" will appeal to collectors, and the same may be said of Ananda K. Coomaraswamy's article on India Bronzes. The illustrations of certain of these bronzes prove their authors to have been aware of the truths of anatomy, but equally alive to the claims of artistic composition. Several of the figures display perfect knowledge of muscular action, although anatomical details are not given; but three or four of them, notably Sundara Murti Swami (Plate 1, Fig. 1) and Pattini Devi (Plate 1, Fig. 5) have a deliberate exaggeration of the slenderness of the waist which shows that the sculptors had their own view as to the necessity of rigid accuracy in ideal representation. But is it not singular that in countries where the corset was unknown the contracted waist should be exhibited as a sign of beauty? With regard to the Rokeby Venus controversy the editors state their belief in the authenticity of the picture to be unshaken.

New Inventions.

APPARATUS FOR THE INHALATION OF ETHER AND OTHER DRUGS.

THIS is an apparatus for the inhalation of ether and other drugs by what is known as the "open method"—i.e., without the patient rebreathing the drugs or his own breath. It consists of a metal drug chamber, a face-piece or mask, and a float (Fig. 1).

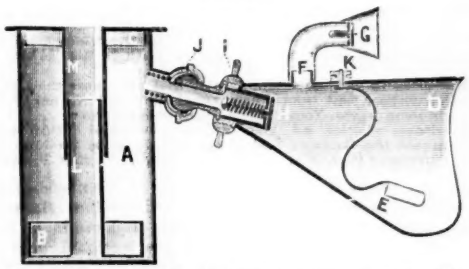
FIG. 1.



The external appearance of the apparatus.

It will be seen that the chamber A, which is cylindrical, has a bottom, and moveable lid, C, with a tube, M, running down from, and fixed to, the inside of the lid C (Fig. 2). This tube, M, is open at both ends, one end communicating through the lid with the external air and the other end being inside the chamber A for the reception of a similar, but smaller, tube L, which is fixed to, and passes through, the middle of a float, B, the rising and falling of which

FIG. 2.



The apparatus in section. A, Drug chamber. B, Float with inner tube. C, Lid with outer tube. D, Face-piece. E, Tongue-piece. F, Outlet funnel. G, Outlet valve. H, Inlet valve. I, Joint for connecting various face pieces. J, Ball and socket joint. K, Nut for fixing or releasing tongue-piece. L, Inner tube. M, Outer tube.

causes the tubes to work in telescopic fashion. Both tubes being open at both ends causes the air inspired to pass into the chamber through the tubes and to come into contact with the drugs below their surface, from which it emerges into the upper portion of the chamber. The float B is a circular airtight box, the buoyancy of which carries the weight of the smaller tube L to the extent that the upper surface of the box is on a level, or thereabouts, with the surface of the drugs in the chamber.

The chamber has near to the top an outlet valve, H, which permits the air that has passed through the drugs to pass from the chamber A to the face-piece D and thence to the patient, who finally disposes of it by an outlet valve, G, in the funnel, F, from the face-piece. The face-piece D, of the shape ordinarily used for anæsthesia, contains a "perforated tongue" E, which is a piece of metal about 1½ inches wide, ⅜ inch thick, and ¾ inch deep, and is perforated from back to front to allow the air and drugs to pass from the face-piece into the patient's mouth. This tongue, E, is fastened to the inside of the face-piece by a pliable band and is detachable, K, at will by the person administering the inhalation. The object of the tongue-piece is to prevent the patient closing the teeth while under anæsthesia. The face-piece is connected to the chamber by a ball-and-socket joint, J. The joint I is for connecting various face-pieces.

The makers of the above described apparatus are the Hospitals and General Contracts Company, Mortimer-street, London, W.

ROBERT HUGH HODGSON, M.D. Durh.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

AN ordinary meeting of the Council was held on May 12th, Mr. BUTLIN, the President, being in the chair.

It was resolved to send the following address of loyalty and condolence to His Majesty the King:—

MAY IT PLEASE YOUR MAJESTY,—We, the President, Vice-Presidents and Council of the Royal College of Surgeons of England, venture to approach Your Majesty in order to express our deep grief at the sudden and unexpected death of Your Majesty's beloved Father our late revered Sovereign, and we humbly pray Your Majesty graciously to receive our respectful sympathy.

During his reign, which was all too short, he gained the love and confidence of his subjects throughout the world to a degree which we believe has never been surpassed by any sovereign. At the same time, he endeared himself to the people of foreign countries in a remarkable manner by his tact, courtesy, and kindness, so that his death will be felt by them in little less degree than by his own subjects.

Surely, no Monarch was ever more sincerely mourned than he will be.

We desire respectfully to express our devoted loyalty to Your Majesty, and our trust that God may grant You good health and that Your Majesty may live to reign for many years in the hearts of Your people.

In witness whereof we, Your Majesty's loyal and dutiful subjects, have caused the Common Seal of the College to be hereunto affixed this 12th day of May, 1910. HENRY T. BUTLIN, President.

And it was also resolved to present the following address of condolence to Her Majesty Queen Alexandra:—

MAY IT PLEASE YOUR MAJESTY,—We, the President, Vice-Presidents, and Council of the Royal College of Surgeons of England, desire humbly to offer our sincere and respectful condolence with Your Majesty under the great loss which Your Majesty and Your Illustrious Family have sustained by the sudden and unexpected death of His Majesty King Edward VII.

We earnestly and respectfully trust that the expressions of grief which have been sent from every part of the world will help to mitigate, in some degree, Your Majesty's own private sorrow.

In witness whereof, we, Your Majesty's loyal and dutiful subjects, have caused the Common Seal of the College to be hereunto affixed this 12th day of May, 1910. HENRY T. BUTLIN, President.

It was resolved to grant diplomas of Membership to 88 candidates successful at the recent examination. In accordance with a report from the Court of Examiners it was resolved that the examinations of the National University of Ireland be accepted on the same conditions as the examinations of the late Royal University, so far as candidates are concerned, who desire to enter for the First Professional Examination for the Fellowship. It was resolved to issue diplomas of the Licence of Dental Surgery to 35 successful candidates.

A letter was read from Professor G. A. Wright resigning his seat in the Council, and expressing the wish that the resignation should take effect before the July election. The resignation of Professor Wright was accepted with regret.

A letter was read from Dr. Robert Fletcher expressing his appreciation of the action of the Council in awarding him the College medal, and the PRESIDENT reported that the Right Hon. James Bryce, British Ambassador at Washington, had kindly undertaken to present the medal to Dr. Fletcher on behalf of the College.

MEDICINE AND THE LAW.

The Signing of a Death Certificate by an Unqualified Person.

AT the recent assizes at Leeds, Charlton Forman, who was proved to be in the employment of Mr. Charles Lyddon, a medical practitioner, as a dispenser, bookkeeper, and surgery attendant, was charged with forging that gentleman's name on a certificate of the cause of death. The evidence showed that a little girl who was ill was taken to see the prisoner, who apparently treated her medically, and when she died gave a certificate, to which he appended the name of Mr. Lyddon. Mr. Lyddon, who gave evidence, said that he paid the prisoner not by wages but by a share of profits, and that he himself did not remember ever having seen the deceased. In cross-examination by Mr. H. T. Waddy, counsel for the defence, he said that he had always "told the prisoner to be careful what he was doing," and admitted that he had no idea how many certificates the prisoner might have signed. He stated, however, that he did not know of one certificate being so signed, and denied that his name had often been written on the certificates by the prisoner with his authority. On the other hand, the prisoner admitted having signed many certificates, and stated that he had not been forbidden to do so until Mr. Lyddon received a letter on the subject from the General Medical Council. In the end the jury found the prisoner guilty, but strongly recommended him to lenient treatment, expressing the opinion that the conduct of Mr. Lyddon in the matter should be taken into consideration. Mr. Justice Ridley, who in the course of the trial had made observations on the danger of the practice alleged to have existed, and who in passing sentence expressed the hope that the fact of the prosecution having taken place would have a useful effect, imposed a fine of 40*s*.

The Preservation of Dead Bodies with a View to Identification.

Attention was recently called in THE LANCET to the success which has attended the installation in connexion with the City of London coroner's court of a Herscher's formalin apparatus (Richter's system) for the preservation of dead bodies awaiting identification. At an inquest upon an unknown man which has since been held in that court, Dr. F. J. Waldo elicited from the divisional surgeon of the City Police evidence to the effect that the features had become more recognisable since the body had been subjected to the chemical effect of the formalin. Mr. J. Kearney said that he had noticed this result already in the case of other bodies so treated. In the case in question the photographs of the face of the deceased were found to be much less likely to lead to recognition and positive identification than the inspection of the actual features. The photographs which it is the practice of the City Police to take, in addition to preserving the actual remains, show the full face and profile, and the coroner made the useful suggestion that if others were made to record the appearance of the body in its clothing they would supplement more effectively the means of identification afforded by the formalin apparatus. It was mentioned in the previous note to which we have referred that outside the City the police find descriptions more useful than photographs for the purpose of identification. This may be the case when it is a question of advertising the fact that a body has been found and of inviting those who think that they can recognise it to come forward. For really trustworthy identification the preservation of the body, together with a photographic representation of its appearance when found, must supply the best means, and it is to be regretted that their employment is not more general. Such completeness of identification forms a useful contribution of science to inquiry held in the cause of justice, for both the civil and criminal law are concerned in proof of who the person is who lies dead, and cases will be remembered which have attracted attention where absurd mistakes have been made. Bodies have been claimed by two or more women simultaneously as representing their husbands, and after burial persons "proved" at inquests to be dead have appeared on the scene to show how unsatisfactory their alleged identification has been.

THE LANCET.

LONDON: SATURDAY, MAY 21, 1910.

The Co-education of Men and Women Students of Medicine.

IN the April number of the *London Hospital Gazette* there appeared a suggestion that women medical students should be admitted as students at the London Hospital Medical School and generally to the service of the London Hospital; and in the May number of the same excellent journal several letters are printed on a subject which is of growing importance in education and in hospital administration. The question of the co-education of men and women as medical students has not yet received the close consideration to which it is entitled, but now that the admission of women to the medical profession has long been settled, all the universities and other examining bodies with the exception of the Universities of Oxford and Cambridge having granted to women rights and privileges on exactly the same terms as they grant them to men, the advantages and disadvantages of co-education must receive attention and appreciation. And the matter must be looked at from several sides—we must examine the effect on the hospital as a public charity, on the medical school as a place for the study of men students, and on women medical students as an integral part of the medical profession not yet receiving a full due. The matter would be somewhat more simple as far as London is concerned, if in London there were no medical school admitting women medical students, but there exists the London School of Medicine for Women, where women students have for nearly 40 years been able to study all the subjects of the medical curriculum, and where recently, at great cost, the whole medical school has been modernised. In connexion with the School of Medicine for Women is the Royal Free Hospital, where the greater part of the clinical teaching of the women students is carried on, and they have in the New Hospital for Women further facilities for obtaining clinical instruction, while many of the special hospitals are also open to women medical students. While then certain disabilities do exist for medical women, no one can say that in the last generation things have not moved quickly towards an equalisation of the sexes in the medical profession.

Of the letters which have appeared in the *London Hospital Gazette* by far the most important is one signed "Trotula," the writer being a woman medical student, who has chosen as her pseudonym the name of the well-known woman professor at the celebrated medical school of Salerno. In her letter "Trotula" brings forward a large body of evidence which shows that women students are admitted to medical schools and hospitals on the same terms as men in very many places both abroad and at home. In Paris there are more than 300 women students with some 3000 men students, and the women are permitted to attend all the hospitals. In Rome, Genoa, Bologna, Brussels, Liège, Geneva, and Berne, women students enjoy all the privileges accorded to men, and in some centres this has been the case for many years. In Rome, for instance, women students have been admitted since the year 1870; in Berne they were admitted in 1876. In Upsala and in Copenhagen for more than 30 years the women students have had the same privileges as the men. In the British Isles, since the year 1885, 17 medical schools with the hospitals connected with them have in turn opened their doors to admit women students. In most of the cases all the hospitals of the town where the school is situated have been made available for women students, and in those cases where there are some exceptions it is agreed that the best hospitals have admitted women. The question now naturally arises, What result has the admission of women students had on the entry of men students? Has it had the effect of diminishing the number of those who come as students to the hospitals and medical schools? The answer appears to be unequivocal: no such diminution can be proved from the consideration of the statistics available. Practically in every case there has been on the whole an increase in the number of men students, fluctuations occurring just as occurred before the admission of women. It thus appears to be clear that both at foreign universities and in the medical schools of this country which have tried the experiment of admitting women medical students on the same terms as men, the institutions have not suffered by any diminution in the number of the entries of male students; and if we may reason from these data it may be thought to be fairly sure that this misfortune would not happen if one or more of the medical schools of London were to adopt the same practice. In direct opposition to such apprehensions, it is urged that several advantages would accrue to the hospital if a certain number of women students were admitted every year. The income of the hospital would increase by the amount of the extra fees, and it is further claimed that as the total number of students would be increased the medical school would have greater prestige as a teaching centre. To this it may be answered that an increase in the number of students is by no means an unmixed benefit, for instances have been known where the students have been too numerous for the material which they have opportunity to study. The advantages to the hospital and the existing medical school by the admission of female students cannot be called unequivocal; but the advantages to women medical students would, we think, be certain. The admission to such a hospital as the London Hospital would undoubtedly afford them far greater and more varied clinical experience than can be obtained in a smaller hospital. Here again, however, there is room for reservation. The knowledge of the student depends not so much on the extent of his or her clinical experience as on the use which is made of those facilities which are afforded. We believe that many examiners will agree that some of the best

students, those who diagnose the cases submitted to them most accurately and readily, come from the smaller hospitals. We would not say a word against a large clinical experience, but we believe that any general hospital of even 100 beds is capable of supplying all the clinical experience which the average student needs. The other letters in the *London Hospital Gazette* are a little indefinite in their reasoning, but they leave the reader in no doubt of the views of their writers, who are wholly opposed to the admission of women students. The writers consider that the presence of women would tend to diminish the number of men entering, and they view with apprehension the prospect of a diminution in the number of resident medical appointments available for men.

The questions raised, it will thus be seen, are by no means simple—any curt dismissal of them with a simple yea or nay would be silly. There are, undoubtedly, advantages to medical students in having wider opportunities of study; but, on the other hand, there are no less certain benefits in the practice of women studying medical subjects in a separate school. We do not question for one moment the practicability of mixed classes. Experience of many medical schools both at home and abroad proves conclusively that men and women students can perfectly well work together. In the smaller towns possessing medical schools, where there is not a sufficient number of women wishing to study medicine to justify the establishment of a separate school, it is clearly not unreasonable that the women students should study at the same medical school as the men; but in a city like London, where the number of students of medicine is great, there are surely sufficient women students to justify the carrying on of a separate medical school for their benefit. The difficulties of co-education are in some ways less when we have to deal with clinical instruction, and the really important matter is whether women students have sufficient opportunities in London to study clinical medicine and surgery. We have no doubt that any woman student of medicine can, under existing conditions, find all the opportunities which she really needs for clinical study, and the success of many of them both at examinations and in practice fully bears out this opinion. The tendency of many medical students, both men and women, is to range too widely over the fields of clinical study; rather they should concentrate their attention on a smaller number of cases. A few examples of disease carefully and conscientiously studied will avail far more in examination and in practice than many cases merely glanced at. What the decision of the London Hospital will be we cannot, of course, say, but we feel sure that the care and attention which the importance of the subject demands will be devoted to its consideration. At present we think the suggestion is a little premature, but "Trotula" has raised the issues in an able and ingratiating manner, advancing one argument which will cut the ground away from her most uncompromising opponents. She considers that women students would gain the advantage by training with men students of acquiring a more correct estimate of their own capabilities than could be gained in a medical school where all the students are women.

Freud's Theory of Hysteria and other Psychoneuroses.

THE student of the history of such an old-world disease as hysteria cannot fail to be impressed with the fact that the point of view from which it has been considered has varied greatly from one epoch to another, and that this point of view may be taken to be a reflex of the mental outlook of the age in which it has found an expression. The days of elaboration of comparisons and analogies between hysterical and organic phenomena, such as are associated with the school founded by CHARCOT, have been succeeded by a period when the interpretation of the disease is being sought in the realm of mind, when the symptoms of hysteria are being assigned to a disturbance of a psychological nature that may be traced with precision through all hysterical manifestations. The revolt has been led by BABINSKI, JANET, and FREUD, each of whom has played a noteworthy rôle in the dismemberment of the traditional hysteria. To what extent their somewhat conflicting hypotheses will stand the criticism of subsequent investigation remains to be seen. According to M. BABINSKI, hysteria is a disease by suggestion: only such symptoms as can be produced by suggestion and removed by persuasion can be allowed to be hysterical. If certain symptoms cannot thus be produced or removed, they do not fall into the category of hysteria. While this view has much attractiveness it may be doubted whether the eminent French clinician is not guilty of the logical error of *petitio principii*. His equally eminent compatriot, the learned professor of the Collège de France, has in several contributions of permanent value elaborated a theory of hysteria which is more satisfying and of greater applicability. M. JANET holds that hysteria, almost literally, "is but a sleep and a forgetting," that its keynote is amnesia, the outcome of a dissociation of mental processes and systems which ought normally to be in intimate union. If a patient develops a hysterical monoplegia it is because the system of ideas associated with the voluntary activity of the limb is split off from the general content of consciousness and becomes a disaggregated focus on a lower or subconscious level. Notwithstanding the favourable reception accorded to this hypothesis there are some difficulties in the way of its acceptance.

The views of hysteria and other psychoneuroses associated with the name of Professor SIGMUND FREUD of Vienna are still, we believe, comparatively unknown in this country, although they were promulgated some fifteen years ago and have been both modified and amplified since. They have recently become available to English readers in a translation[1] by Dr. A. A. BRILL, of Columbia University, and this will no doubt serve to give an impetus to their study in England and America. It is a matter of some difficulty to supply a brief analysis of Professor FREUD'S hypothesis without running the risk of misrepresentation, and, as it does not lend itself to cursory summarising, judgment ought not

[1] Selected Papers on Hysteria and Other Psychoneuroses, by Professor Sigmund Freud, Vienna. Translated by A. A. Brill, M.D., Ph.D. New York: The Journal of Nervous and Mental Disease Publishing Company. 1909. Pp. 200. Price $2.00. No. 4 of Nervous and Mental Disease Monograph Series.

to be passed on it prematurely. The claim is rightly made by its author that only those who have attempted to follow in his footsteps by utilising his tests and methods are in a position ultimately to criticise. Professor FREUD'S study has led him to group together hysteria, many phobias and obsessions (usually known as psychasthenia), anxiety neuroses (a form of neurasthenia), and certain hallucinatory psychoses, as "defence psychoneuroses," and in all of these he finds a common factor variously modified, but readily traceable. The prolonged investigation of such cases has convinced him that psychical health existed in all until there appeared some experience, idea, or feeling which evoked so much mental distress or pain that the sufferer decided to forget it and to dismiss it from his mind for ever. That this intentional forgetting succeeds often enough Professor FREUD cannot deny, and he naïvely remarked that he cannot maintain it is pathological. In other persons, however, the effort is a failure, and the unpleasant incident sinks into the mind, but is modified in another way. The unpleasantness—i.e., the "affective" element—is dissociated from the idea, and in the case of hysteria is "converted" or transformed into certain physical manifestations, so that the conscious life is burdened with what may be called a "symbol" of the original "psychical trauma," which has now been consciously forgotten, but which exists "repressed" in the recesses of the subconscious mind. The "symbol," or, in other words, the visible hysterical manifestations, will remain until they are re-converted into the original idea, or rather until the "affective" concomitants of the original idea have been dissociated again from the bodily or physical phenomena and re-transferred to it. This can be done by the "cathartic" or psycho-analytic method, the aim of which is to reconduct these concomitants from the physical to the psychical sphere. If the patient can be made to see, consciously, that the hysterical phenomena of which he complains are the outward, "converted," expression of an unpleasant idea, representing the unpleasant element in it, while the idea itself is quite forgotten, and if he can be led to associate once more the idea and the "affect," then the hysterical phenomena have no longer any *raison d'être*, and disappear. So says the author, and invites us to judge his results. The characteristic feature of hysteria, therefore, according to FREUD, is not amnesia, but the ability of conversion. If the affect of the unbearable idea is converted into physical appearances, hysteria develops. If there is no adaptation for conversion, the affect must remain in the psychical sphere, but becomes attached to other ideas, not in themselves unbearable. These thus develop into obsessions, phobias, anxiety neuroses, and so on. This is Professor FREUD'S psychological theory of the defence psychoneuroses.

There remains to be considered the most important element in it. Of what nature are these unpleasant, unbearable, incidents, feelings, or ideas, that would appear to be so prolific in the establishment of psychical ill-health? In all the cases that Professor FREUD has analysed it has been the sexual life that has furnished the material. Be it hysteria, obsession, phobia, or anxiety neurosis, it matters not; the painful, repressed idea is always and only sexual, according to the Viennese professor. Again he naïvely remarks that it is not possible theoretically to exclude its arising in other spheres; he, however, has not found it so. The reader who has hitherto been unfamiliar with Professor FREUD'S work may be reasonably excused for expressing surprise that every case of hysteria, even in earliest childhood, has for its origin some sexual experience; that acquired anxiety neurosis (a form of neurasthenia, but to be distinguished from it) is the result of coitus interruptus, or of insufficiently gratified libido, or of other sexual factors that need not be specified here; and that very many, if not all, phobias and obsessions have the same etiology. Professor FREUD is candid enough to admit that he cannot deny the occurrence of other causal elements in the development of the defence neuroses, but these pale into insignificance compared with the sexual. If he thinks so, the difficulty of maintaining an open and unbiassed mind in the course of a long and intimate psycho-analysis must be enormous. The temptation to fasten on the most trifling sexual incident must be overwhelming. Wherever one looks for these incidents of the sexual life they can be found near at hand. In fact, Professor FREUD'S hypothesis explains too much. At the same time there is little attempt to deal seriously with those instances of hysteria the etiology of which is palpably not sexual, cases in which cures result without any application of the psycho-analytic method. He admits that this method is inapplicable below a certain *niveau* of intelligence, that he cannot conceive himself entering deeply into the psychic mechanism of a hysteria in a person who appears to him common and disagreeable, and who will not, on closer acquaintanceship, be able to awaken in him human sympathy; that psycho-analysis was created for patients who are permanently incapacitated, but they must possess a certain degree of education and be of reliable character. Thus, on the other hand, his hypothesis explains too little. It may be questioned whether there do not exist certain racial differences of mind, temperament, and disposition whose subtle influence should not be ignored in a consideration of the difficult and important matters to which Professor FREUD has devoted himself for 15 years with rare acumen and untiring energy.

An Interesting Outbreak of Scarlet Fever.

DURING recent years scarlet fever has assumed, in many epidemics, a type so mild that difficulties in diagnosis have frequently arisen. The non-recognition of such mild cases may lead in the future to a marked growth in the prevalence of the disease and to a proportionate increase in the labours of medical officers of health. When the disease is of this exceedingly mild type it is almost impossible to trace the origin of infection or to find "missed" cases; and since medical officers of health up to the present have so efficiently discharged their duties it may happen that when they fail to account for every outbreak that occurs they will unjustly be charged with neglect by a public that cannot appreciate the altered conditions. 20 years ago

scarlet fever was regarded too lightly, but since the Notification of Infectious Diseases Act was adopted the attitude of the public has changed, and the occurrence of a few cases of scarlet fever is often sufficient to engender an unreasoning panic. The right attitude lies between these extremes. Dr. R. SAUNDBY pointed out in our columns recently that a period of exemption from scarlet fever of the malignant type is leading the medical profession to forget the terrors of the disease at the very time when the public fears are exaggerated. Any making light of scarlet fever is to be deprecated, but it may be needful for medical men to point out to their patients that although scarlet fever is a notifiable disease it cannot always be notified, especially when the manifestations are mild.

An outbreak recently occurred at Ingatestone in Essex, which is in many respects interesting in character. The village, which has a population of about 1000, after being practically free from the disease for many years, had the infection introduced, and all the early cases were of so mild a character that they only became recognised when desquamation occurred. A very careful search for missed cases and strict attention to the children attending the public elementary schools appeared to have arrested the spread, when suddenly a series of nine cases occurred. During the next five weeks two or three cases occurred weekly, then suddenly 20 cases occurred in one week, after which the infection rapidly subsided. Milk came under suspicion at the earlier outbreak, and throughout the whole period over 80 per cent. of the houses invaded obtained milk from one source. This in itself was almost sufficient to implicate the milk, but other facts, which the milk theory seems incapable of explaining, had to be taken into consideration. Practically all the cases occurred in a limited area, whereas the milk-supply extended over a much larger area. The largest consumers of milk within the infected area were but little affected, and beyond this area they were not affected at all. All attempts to account for this circumscribed diffusion have so far failed, though apparently every effort has been made to find a satisfactory explanation. Dr. J. C. THRESH, the medical officer to the Essex County Council, in his special report points out many other peculiarities of the outbreak, such as the age and sex incidence, and, notably, the escape of those who drank raw milk, whilst those who only used milk in tea were attacked. The local press have made much of the "mysterious" epidemic, and some appear to think that the two most mysterious features in connexion with the outbreak are the failure of the medical men to diagnose the cases in the early stages, and the failure of the sanitary authority to stamp out the infection. Under conditions such as are described in the report the medical men can be exonerated from all blame; in fact, they are to be highly commended for the way in which they helped the sanitary authority to obtain information about every suspicious case. The authority through its various officers seems to have left no stone unturned to discover the means whereby the infection was being spread and to have taken every possible means to arrest its extension. In this instance, however, the source of origin remains obscure.

Apart from the difficulty of tracing the origin of the outbreak, and of discovering the means of spread, Dr. THRESH'S report brings out clearly the difficulties which the medical practitioner in charge of mild and doubtful cases may have to contend against. If the first case seen is mild and atypical it is very likely to escape recognition and to be classed as influenza, and only later, when some complication such as nephritis occurs, or when desquamation becomes obvious, is its nature established; meanwhile, such a case may easily be the means of spreading the disease widely and the practitioner may be unjustly accused of negligence or incompetence. In the present outbreak about half of the cases were atypical in onset and course, they began often without any definite characteristic commencement of fever, and sometimes failed to manifest any rash, while the appearance of the tongue was rarely characteristic. Cases of sore-throat were very prevalent, and yet patients with this symptom and with coated tongue did not always develop a rash or show peeling subsequently, while those with clean tongues not infrequently desquamated, although no rash was observed. Indeed, Dr. THRESH states that in nearly half of the cases, in the absence of definite scarlet fever in the village, the nature of the infection would not have been suspected. Such cases must present great difficulties to the practitioner even during an epidemic. On the one hand, there is the liability to overlook the true nature of the condition, and thus, in the absence of special precautionary measures, to assist in the spread of the disease. On the other hand, if the case proves not to be scarlet fever, irksome and tedious restrictions are needlessly imposed upon the patient, or he may even be exposed to the risk of infection if he is sent to an isolation hospital. In either case the medical attendant is likely to incur the displeasure of the patient and his relatives, and to suffer unjust condemnation. It is hard for the lay mind to grasp the fact that even common diseases are variable in their manifestations, that they are, indeed, morbid states and not stereotyped entities. Even when a rash is present the diagnosis of scarlet fever may present difficulties, owing to the other rashes which may simulate its characters. In the absence of a rash and of a typical onset the recognition of the disease may be well-nigh impossible until some complication arises or until desquamation occurs; moreover, even desquamation may be inconclusive, since it is not infrequent in other conditions. It is important that these facts should be more widely known, since they would lead to a due appreciation of the difficulties which the health authorities and the medical practitioners both have to face in their respective spheres of duty. The practitioner has responsibilities in regard to the public health as well as to his individual patients, and these he is bound to discharge under penalty. It ought to be more generally recognised that in the care of patients with doubtful infectious disease the medical man has a very difficult task.

BRITISH MEDICAL BENEVOLENT FUND GUILD.—A drawing-room meeting of the Guild will be held on Wednesday, May 25th, at 19, Portland-place, London, W., by the kind permission of Lady Fripp.

Annotations.

"Ne quid nimis."

WHOOPING-COUGH MORTALITY.

ONE of the most important and satisfactory features of the remarkable and continuous decline of the death-rate in England and Wales during the last 50 years, and more especially during the current decennium, is the fact that the proportional decline of child mortality has exceeded the decline at all ages of the population. The last published report of the Registrar-General shows that the mean annual crude death-rate in England and Wales during the 10 years 1861–70 was equal to 21·3 per 1000 of the population at all ages, since which it has steadily declined, and did not exceed 15·6 per 1000 during the eight years 1901–08, thus showing a decline in the rate of mortality equal to 27 per cent. Among children aged under 5 years the mean annual rate of mortality was equal to 68·6 per 1000 during the ten years 1861–70, and had declined to 46·7 per 1000 during the eight years 1901–08, the decline of mortality at these ages being equal to 32 per cent., against 27 per cent. at all ages. This marked decline of child mortality invests with much interest the statistics of whooping-cough mortality, which is more essentially a child mortality than any other of the principal epidemic diseases, not even excepting measles. Of the 9851 deaths from whooping-cough registered in England and Wales during 1908, the most recent year for which the facts are yet available, 97 per cent. were of children under the age of 5 years, and 2·7 per cent. of children aged between 5 and 10 years, only 26 of the 9851 deaths from this disease during the year being of persons aged upwards of 10 years. It may be noted that of the 8011 fatal cases of measles in England and Wales during 1908, 93 per cent. were of children under 5 years of age. During the 10 years 1861–70 the mean annual rate of mortality from whooping-cough was equal to 530 per 1,000,000 of the population of England and Wales at all ages, and successively declined to 513, 451, and 378 per 1,000,000 in the three following decennia; the mean annual death-rate from this disease further declined to 289 per 1,000,000 during the first eight years (1901–08) of the current decennium. Thus the mean annual crude death-rate from whooping-cough during these eight years showed a decline of no less than 45 per cent. from the rate that prevailed in the 10 years 1861–70, whereas the decline in the mortality of children under 5 years, from all causes, during the same period did not exceed 32 per cent. The decline in the death-rate from whooping-cough, calculated on the population at all ages, must, however, somewhat overstate the true rate of decline, as the English population at the present time includes a considerably smaller proportion of children under 10 years of age than was the case 40 or 50 years ago; and we have seen that whooping-cough is a disease almost exclusively fatal among children under the age of 10 years. Whooping-cough appears to be the only one of the principal epidemic diseases of which the mortality among female children is persistently higher than among male children. The mean annual mortality from this disease during the eight years 1901–08 was equal to 289 per 1,000,000 persons of all ages and of both sexes, as stated above; among males, however, the mean rate did not exceed 268, while it was equal to 309 per 1,000,000 among females. There is one other exceptional feature of whooping-cough mortality which is worthy of note. It appears from a table in the Registrar-General's annual report for 1908 that the death-rate from whooping-cough among infants under one year of age in rural populations exceeds that in urban populations. The ratio of urban to rural mortality (under one year) from whooping-cough is stated to be as 85 to 100, whereas the mortality from other epidemic diseases is almost invariably considerably higher in urban than in rural populations. That the present proportional mortality among cases of whooping-cough is in great measure the result of ignorance and the neglect of due care and treatment is fully proved by such class-mortality statistics as have been hitherto published. The fact, moreover, that the mean annual rate of mortality from scarlet fever in England and Wales, which in the 10 years 1861–70 was equal to 971 per 1,000,000, whereas it did not exceed 113 per 1,000,000 in the eight years 1901–08, showing a decline of 88 per cent., suggests for consideration the sanitary problem whether hospital treatment of whooping-cough and measles might not very sensibly accelerate the decline of child mortality, which is already one of the most encouraging results of our improved sanitary system of administration.

A BIOGRAPHER OF MOLIÈRE.

BY the death of Alexander Menzies Brown, sometime officer of health in Sydney, New South Wales, the honourable little company of medical men of letters and medical antiquarians loses one of its oldest and most cultivated personalities. An omnivorous reader and systematic student of French literature and philosophy in the seventeenth and eighteenth centuries, Dr. Brown will be chiefly remembered for his book on "Molière and his Medical Associations," which was discussed in complimentary terms by ourselves on its appearance. In this charmingly written work the writer accounts for the great French comic writer's contempt for doctors on the ground that Molière was himself ill of a disease which, when far advanced, is still for the most part incurable even by the most enlightened physicians. Molière was phthisical, and the rudimentary seventeenth century medicine could not help him, and so Molière hated medicine. Even in these days we come across hatred and satire thus actuated. "But for his bodily infirmities, as well as those of his mind," says Dr. Brown, "he found artistic uses. The cough he had been subject to for so many years became a feature in his style, and gave a pleasing and peculiar force to certain of his rôles. Molière's cough, like the lameness of Béjart, his fellow actor, was for a long time a tradition of the Parisian stage." He died in harness and in a strangely characteristic part. "On the evening of February 17th, 1673, in performing Argan in the *Malade Imaginaire*, towards the conclusion of the piece, and at the moment of pronouncing the immortal *Juro!* he was seized with a fatal illness; he tried to hide his feelings in his wonted laugh," the curtain fell, and in an hour he was dead. But, characteristically, during that hour he managed to abuse his wife's soup, and to refuse medicine—("Why should I lose the little that remains of life?")—while asking for a pillow "stuffed with drugs," which his wife had promised him to make him sleep. With his last words almost he declared that his hæmorrhage was no worse than usual. Molière's medical biographer has himself ended in a manner remarkable from the point of view of both medicine and literature. Ill, and often very seriously ill, for many years of a long life from the after-effects of malaria, which he could not shake off, Dr. Brown was apt to say sarcastic things about the powerlessness of medicine even in the present age. In a letter to a friend he has described his last illness and his own end in a manner and with a fortitude which compel admiration for his training as a medical man. The recipient of the letter does not feel that he is guilty of any breach

of confidence in reprinting some portions of Dr. Brown's letter, which was written to dictation a fortnight before death. Dr. Brown fell very ill in November last, when, as he says, "Profuse cold perspiration and exhausting cough led to asthmatic spasms and unconsciousness. My medical attendant and a near relative were summoned and last instructions given. ..... Hovering between life and death till the night of the 29th, a change for the worse occurred and all seemed up with me. Calmly contemplating the painless ebbing process of my long and feverish life, I marked the doctor's pose sitting on the bedside nursing his knee familiarly, looking at my face and the almost pulseless wrist he had just been feeling. With a dubious expression he broke silence with the cool remark, 'Well, my friend, how do you feel in mind?' 'Resigned,' was the reply and as audibly as strength permitted. Apologies to Swinburne—

> 'The weakest stand, the strongest fall:
> Four score years, no hope, no fear;
> The poppied sleep the end of all.'

The impression [elicited by my remark] was a smile of sympathy and a movement of the lips suggestive of Amen! Nothing more. But the end was not yet." This letter is a remarkable document, an instance of that *æquanimitas* to which we all hope to attain at the last. It is not often, indeed, that a man has the courage to describe what he has believed to be his own last moments. Of Dr. Brown's contributions to medical literature his treatise on the "Animal Alkaloids" reached its third edition in 1894, but his scientific culture was not properly of this age. We prefer to remember him in connexion with the name of Molière and as himself the grandson of a Brown who was an intimate friend of the young Robert Burns.

MULTIPLE PHLEBITIS IN SECONDARY SYPHILIS: PRESENCE OF THE SPIROCHÆTA IN THE WALL OF THE VEINS.

AT a meeting of the Société Médicale des Hôpitaux of Paris on April 8th M. Georges Thibierge and M. Paul Ravaut reported a case of secondary syphilis in which occurred a lesion which is insufficiently recognised, though many cases have now been observed—multiple phlebitis. It presents well-marked characteristics; it affects the superficial veins of the limbs, usually of several limbs; there is only slight inflammatory reaction; embolism never occurs; and resolution is slow. The case now reported derives additional interest from the fact that the spirochæta pallida was demonstrated in the walls of the affected veins. A man, aged 25 years, suffering from secondary syphilis, was admitted into hospital on Feb. 25th last. He contracted the disease in the previous December. There was an abundant papular eruption. On March 7th, while his legs were being palpated to ascertain the degree of infiltration of the syphilides, a hard, slightly painful cord of the size of a goose-quill was found in the position of the internal saphenous vein in the lower two-thirds of the right thigh. There was neither redness nor œdema of the limb. The patient declared that for two days he had felt slight pain in the right leg. On the inner side of the leg several hard cords were found, presenting the same characters as the cord in the thigh. In the left leg a similar cord was found, although no pain was felt. On March 8th 5 centimetres of the right internal saphenous vein were removed between two ligatures. On the following days the lesions in the left leg and the left internal saphenous vein, which was neither painful nor tender, formed in the calf a "pipe tube," which was prolonged into the thigh. There was no fever; the patient was only a little weak. On March 21st similar lesions were beginning in the anterior part of the left forearm. On the 26th slight pain was felt in the right elbow and arm. On the following days more veins became affected in the forearms. The excised fragment of vein was found almost completely occluded and a trace of its lumen was found in the centre with difficulty. It contained neither clot nor liquid blood, but only some serous fluid. Examination of smears made from the internal coat of the vein under the ultra-microscope showed amid cellular débris five spirochætæ pallidæ, of which two showed movements. The occlusion and induration of the vein were due to proliferation of the internal coat which formed a series of large prominences budding into the lumen of the vein. At certain places these prominences showed traces of old hæmorrhages. From the excised vein a monkey was inoculated and lesions characteristic of syphilis were produced.

THE USE OF EAU-DE-VIE IN CONNEXION WITH THE PREVALENCE OF TUBERCULOSIS.

Dr. Jacques Bertillon, before the Statistical Society of Paris, has recently compared two maps of France, on one of which were graphically represented the consumption of *eau-de-vie* in each department, and on the other the prevalence of pulmonary phthisis. The first map demonstrated the consumption of *eau-de-vie* to be much greater in the north than in the centre or the south of France; in other words, that there is much less *eau-de-vie* drunk in the wine districts than elsewhere. The second map had a curious correspondence with the first, inasmuch as more phthisis appears to have been certified in the north and east than in the centre and south. The relation indicated between the consumption of *eau-de-vie* and the prevalence of phthisis was also supported by figures having reference to occupation which M. Bertillon brought forward. Thus he found that the mortality from phthisis among *cabaretiers* was much greater than that among shopkeepers leading otherwise the same existence, while railway workmen, with whom sobriety is compulsory, do not suffer from phthisis to anything like the extent which the carmen, draymen, and cabmen suffer. The sex distribution of phthisis, according to M. Bertillon, tells the same story, the attack-rate among adult males being much higher than that among adult females, though in youth the figures are the same; and it is the men, he says, who are mainly responsible for the consumption of alcohol in big cities. From these considerations M. Bertillon came to the conclusion that the first step in the crusade against tuberculosis is to limit the consumption of *eau-de-vie*. To do this, he thinks, would be more efficacious in abating the prevalence of phthisis than either the construction of sanatoriums or the demolition of insanitary buildings, in which connexion he referred, we presume, to the proposal of M. Juillerat, the well-known chief of the Hygienic Bureau of the city of Paris, for dealing with the foci of tuberculosis in the French capital.[1] M. Bertillon's views did not escape criticism. M. Vassilière suggested that the partition of France into the north, central, and south districts did not take into account the fact that the working classes of the south of France drank vast quantities of liquid alcohol, notably absinthe, apparently without the number of cases of tuberculosis increasing. He said also that the districts of the north and east have dense populations living in unhygienic conditions; and he pointed out that in the *corons* (groups of dwellings constructed by the coal-mining companies for their employees) the miners, though they were formidable consumers of alcohol, had a much smaller attack-rate of tuberculosis than the workmen in towns. He considered that the influence of alcohol on

[1] See THE LANCET, Jan. 1st, 1910, p. 35.

the prevalence of phthisis must be studied in connexion with the influences of unhygienic conditions, density of population, and so on. M. Bertillon explained that he had excluded from his actual map with reference to phthisis the towns, and had not taken the influence of absinthe into account because there were no official figures forthcoming. M. Schelle and M. Cadoux both pointed out that the influence of climate must be taken into consideration. M. Bernard agreed with M. Bertillon's arguments as far as they had reference to railway employees, pointing out that among engine-drivers, with whom sobriety is compulsory, phthisis is very rare, while the lower class of porters suffer from phthisis and drink freely. An interesting debate was left, it will be seen, in a rather inconclusive position. The suggestion of a connexion between the abuse of alcohol and the prevalence of phthisis, as indicated by the maps, was admitted by the audience, and in this way the etiological importance of alcoholism in phthisis has gained support; but it seems clear that M. Bertillon did not carry his audience with him in attributing the first rôle in causation to alcoholism. The general result of previous statistical inquiry has proved the proneness to phthisis of those who live under bad social conditions, in poorly ventilated and ill-lighted rooms, and under conditions of overcrowding and uncleanliness; and M. Bertillon's arguments leave the accepted conclusions untouched.

CHRONIC PURPURA DUE TO MALIGNANT ENDOCARDITIS.

IN the *British Journal of Dermatology* for February Dr. F. Parkes Weber has reported a case of chronic purpura due to malignant endocarditis which simulated splenic anæmia. A sailor, aged 28 years, was admitted into hospital on July 1st, 1909. At the age of 20 years and also at the age of 21 years he suffered from gonorrhœa; at the age of 24 years he had malaria. His present illness began two years before admission with purpuric spots on the legs. He gradually became weaker and paler, and noticed an increasing swelling on the left side of the abdomen. There were occasional oozing of blood from the gums and slight epistaxis. He was treated at several London hospitals apparently under the diagnosis of splenic anæmia. On admission he was very pale, weak, and wasted. The legs and lower and inner aspects of the thighs were covered with spots of brown pigmentation between which were petechiæ. On the arms and trunk were a few petechiæ. The ankles were œdematous. There was tendency to bleed from the gums. The heart was somewhat enlarged, the apex beat was in the fifth space outside the nipple line, and there was a systolic apical murmur. A few dry bronchitic sounds were heard. The spleen was greatly enlarged and hard; it reached to the umbilicus on the right and downwards into the inguinal region. The liver was enlarged and hard and its lower edge was felt at the level of the umbilicus. There were a few retinal hæmorrhages and some conjunctival petechiæ. The urine contained a little albumin and some granular and epithelial casts, and afterwards some blood casts. There was no evidence of active malaria. Blood examination showed 1,700,000 red corpuscles, 1900 leucocytes, hæmoglobin 30 per cent., and colour index 0·9. A differential count gave: neutrophile polymorphonuclears, 63·5 per cent; lymphocytes, 29·5 per cent.; intermediates, 4 per cent.; large hyalines, 2·5 per cent.; and mast cells, 0·5 per cent. Dr. Weber accepted the diagnosis of splenic anæmia and gave arsenic. For the first ten days the temperature was often raised to about 101° F., but afterwards there was seldom any fever. Death occurred on July 29th. Towards the end there were considerable bronchitic signs and œdema. At the necropsy the heart was found large and weighed 21 ounces. The left ventricle was hypertrophied. The musculature was very pale. There was old thickening of the mitral valve to which was adherent a soft organised thrombus. In the left auricle a large polypoid excrescence grew from the septum; it was evidently an organised thrombus. At the bases of the lungs were some bright red pleural petechiæ. There was some serous effusion into the left pleura, and also some ascites. The spleen was very large, weighing 110 ounces. It showed several subcapsular anæmic infarcts, some of which were surrounded by perisplenitic adhesions. On section the spleen had a milky-red appearance. The liver was large and weighed 156 ounces, and there were some perihepatic adhesions. The kidneys were large and pale. In the right kidney was an infarct. There were petechiæ on the mucous membrane of the stomach and intestines. The bone marrow of the left humerus was examined and found quite red. Microscopic examination of the spleen showed some fibrosis and large numbers of plasma cells, mainly in rows or small groups near the larger trabeculæ and follicular arteries. The polynuclears in the pulp were much increased. In the liver there were cellular infiltrates in the portal spaces. The bone marrow was extremely cellular and the fat elements had disappeared. The cells were mostly plasma cells with small and large lymphocyte forms. It is remarkable that chronic purpura of two years' duration was due to malignant endocarditis, and that there were leucopenia and splenomegaly which seemed to point to splenic anæmia. Dr. Weber suggests that "splenic anæmia" may be nothing more than a group of symptoms the result of various pathological conditions. In many cases the necropsy has shown considerable vascular or endocardial disease, probably of infectious origin. In a case published by Dr. S. West there was evidence of considerable old disease of the aortic valves, and septic pyrexia occurred at the end. Also in several cases of "splenic anæmia" thrombotic obstruction of the splenic and portal veins or disease of the splenic artery has been found.

SEROTHERAPY IN RHEUMATIC AFFECTIONS OF THE EYE.

Dr. Deschamps of Grenoble, in the last issue of *La Clinique Ophtalmologique* (May 10th, 1910), remarks that until quite recently the bacteriology of rheumatism and its serotherapy have been very obscure, but that since the remarkable report presented by G. Rosenthal to the congress at Budapest last year the subject has entered into a new phase. The bacillus of Achalme, which has been recognised for about ten years, appears to him to constitute the pathogenic agent of rheumatism. The description of this bacillus, as given by Berlioz,[1] is that it is of large size and resembles the bacillus of charbon, having a length of 5 to 7 μ and a breadth of about 1 μ. It is motionless, easily stains, taking both the Gram and the Claudius stain. It is anaerobic. To cultivate it Rosenthal employs his sealed tube, which consists of a layer of lanoline 2 inches high superposed on the culture liquid. This may be ordinary broth, but by preference milk. The milk coagulates in the course of 24 hours with formation and escape of gas. The bacillus survives for several months in the milk. A few fragments of white of egg introduced into the milk cause the bacilli to sporulate. In 1908 Thiroloix found on experimenting upon rabbits, pigs, and calves, that this bacillus produced typical polyarthritis with endocarditis and pericarditis; and in 1909 the same observer, in conjunction with Mdlle. Zoffé and

[1] Dauphiné Médical, No. 5, 1909.

Dr. Rosenthal, isolated it from the blood of several patients suffering from rheumatic affections by means of hæmobioculture. Rosenthal prepared from the serum of horses that had been rendered immune an antirheumatic serum. Dr. Berlioz treated with it various cases with success, whereupon Dr. Deschamps determned to test its value on some examples of rheumatic iritis, and he proceeds to record in detail various cases, amongst which are several of severe iritis of a rheumatic type, which were greatly benefited by this mode of treatment.

A MEDICAL MISSION IN MANCHESTER.

IN a part of Manchester called Red Bank, where the dwellers are very poor indeed, a philanthropic medical man, many years ago, started a medical mission. Red Bank was what is called a low neighbourhood, and besides feeling the burden of bodily sickness, so common in such regions, Mr. Meacham, a good man, was grieved by the godless ignorance of the people. His dispensary was soon crowded with patients, and through his efforts to help in restoring their physical health he hoped to influence for good their moral and religious condition. He has been dead some years, but the institution he founded is still in existence, and the work is carried on by Dr. R. M. Fenn; and now, like many charities, it needs help. At the annual meeting on May 5th, held in the Mayor's Parlour, the treasurer, Mr. A. T. Arthur, said that if it were not better supported it would have to close its doors. There is a deficiency on last year's working, together with an adverse balance brought from the previous year, amounting to £310. The Lady Mayoress said that as the result of a recent visit she had formed the impression "that an absolutely necessary work was being done," and that many helped by the mission would not like to go to the Royal Infirmary. Last year 1290 people were treated, involving 9250 attendances. Of course, all this work ought not to be required, it is contrary to all proper ideas of political economy, but the sickness and distress are there, and until present conditions have ceased it would be inhuman to do nothing in relief. Mr. T. Crewdson said that £200 a year additional would go a long way to put them right financially. Surely a great city like Manchester can raise that amount each year. Medical missions, if worked on a proper basis, and if care is taken not to deprive practitioners in the neighbourhood of a hard-earned wage, undoubtedly do an immense amount of good. The east and the south parts of London bear witness to this, and London is so huge and so disorganised, or rather unorganised, that what can be done for good in that congeries of towns should not be impossible for a self-contained city like Manchester.

ATROPINE IN THE TREATMENT OF TETANUS.

EVEN with the assistance of the antitetanic serum the treatment of tetanus cannot be described as very satisfactory, because deaths occur in spite of all treatment. We have received from Dr. R. F. Secoresto of Barbados an account of two cases of tetanus in which he employed atropine in the treatment. The first case was a coloured boy, 14 years old. Eight days previously he had received a wound in the foot, and four days later the first spasm had occurred. He received medical treatment, but grew worse, and Dr. Secoresto saw him, as already mentioned, eight days after the injury. Well-marked trismus was present, and apparently the whole of the body was involved in the tetanic spasm. The prognosis was very unfavourable on account of the severity of the symptoms. Dr. Secoresto gave by the mouth an eighth of a grain of morphine combined with 1-300th of a grain of atropine every two hours for three doses and then every four hours. From the first dose the spasms markedly decreased in frequency and severity, and the patient was able to obtain good rest at night. In about four weeks the patient was up and about the house. In addition, small doses of calomel and sodium sulphate were given to keep the bowels open, and the wound was dressed with hot turpentine. The second case was a coloured boy, three years old, whom Dr. Secoresto saw by accident, when a well-marked trismus was noticed, but no wound could be found. He had stiffness of the muscles of the body. He was treated similarly, but with smaller doses, and by the beginning of the fourth week all symptoms had disappeared. Dr. Secoresto has seen many cases of tetanus, and was surprised at the effect of the treatment. He mentions as confirmatory of the use of atropine in tetanus that the Government veterinary surgeon told him that he employed large doses of belladonna with small doses of morphia in treatment of tetanus in animals, and that a fatal result rarely occurred. The use of belladonna and of its alkaloid atropine is not by any means new in the treatment of tetanus, but its administration has been abandoned for the most part. It is possible that the employment of the alkaloid may be more satisfactory than the drug itself, and at all events atropine is deserving of trial in cases not responding to the serum treatment. The experience of anyone like Dr. Secoresto, who has seen a great deal of the disease, is always of value, but more than two cases would be needed to place the value of belladonna and atropine beyond dispute in the treatment of tetanus.

SUDDEN WHITENING OF THE HAIR.

SUDDEN whitening of the hair as a result of fright, emotion, or shock figures more frequently in fiction than in the actual records of medical experience, though it is probable that most people believe in the possibility of its occurrence. Professor L. Stieda of Königsberg reviews the subject of the mechanism by which under ordinary conditions hair turns grey or white in an interesting paper in the *Wiener Medicinische Wochenschrift* of March 26th, and he comes to the conclusion that no case of sudden blanching of the hair has ever been satisfactorily established; and, indeed, he goes so far as to suggest that no case has ever occurred or ever will occur. The basis of his negation is that he finds that in the ordinary or physiological whitening of the hair the change is not due to an alteration or a disappearance of the pigment of the hair, but to a replacement of a dark or coloured hair by a clear hair free from pigment. The process is therefore a change of hair (Haarwechsel) and not a depigmentation. The natural colour of hair depends upon the occurrence within it of pigment, and if this is wanting the hair appears grey or white, but the presence of air within the hair may also contribute to its white or grey appearance. Pigmented hairs may contain their colouring matter in granular form or diffused. Light brown, blond, and red hairs appear under the microscope as if saturated. The cortical substance is uniformly coloured, the medullary part is free from pigment. On the other hand, dark and black hairs contain their pigment in fine granules or in large masses, the pigment being so thick in black hairs that no details of the structure can be distinguished, but even in these hairs in the human subject the medulla of the hair is pigment-free. The pigment, according to Professor Stieda, is extraordinarily resistant, and he states that in Egyptian mummies and in bodies which have been in the earth for long periods it is still distinguishable. In regard to the development of pigment in hairs Professor Stieda supports the view of Schwalbe and Meirowski that it develops in the hair cells themselves, and he opposes the older view that the pigment is brought to the cells by pigmented connective cells. Any

alteration in the colour of the hair occurring normally is attributed to falling out of the hair and replacement by hair of another colour or by grey hair. At the same time Professor Stieda admits that a pigmented hair may become grey in its proximal part if the development of pigment in the hair root ceases, so that the newly formed part of a pigmented hair may thus become colourless. The whitening of the hair associated with advancing years is regarded as a physiological process, but Professor Stieda allows that psychical agencies, such as long grief, anxiety, and insanity, may induce similar changes, which are, however, not necessarily permanent. The average life of the hairs is a matter of considerable importance in regard to this question. According to the observations of Dr. Pincus of Berlin, the long hairs of the head last from two to four years, the short ones from four to nine months. Dr. Moll has calculated that the life of the eyelashes is from three to four months. Various theories have been put forward to explain the supposed occurrence of sudden whitening of the hair. Vauquelin suggested that a substance might be excreted by the skin powerful enough to destroy the pigment of the hair. Another suggestion, proposed by Landois, was to the effect that a sudden accumulation of air occurred within the hairs. Metchnikoff has supposed that certain phagocytes or chromophages enter the hair and withdraw its pigment. All of these suggestions Professor Stieda subjects to a very destructive criticism, and he concludes by affirming that all the supposed cases of sudden blanching of the hair are either instances of deception or of incorrect observation. He gives several instances in point; among them the historical example of Marie Antoinette, whose hair is said to have turned grey the night before her execution, the fact being that she had been greyhaired for some time previously. He also mentions the case of a medical practitioner with dark hair in Berlin who went into a hospital to undergo an operation. On leaving he was much commiserated by many people owing to the fact that his hair was snow-white. The truth, however, was that he was not able to dye his hair as he had previously done daily, an explanation which he appears to have withheld from his sympathisers.

THE BRITISH HOSPITALS ASSOCIATION.

A MEETING of this association, which was originally founded in 1884, was recently held at Guy's Hospital by permission of the treasurer and house committee, Mr. H. Cosmo Bonsor being in the chair. The objects of the association are (1) to facilitate the consideration and discussion of matters connected with hospital management, and, where advisable, to take measures to further the decisions arrived at; and (2) to afford opportunities for the acquisition of a knowledge of hospital administration, both lay and medical. The association also proposes to arrange for the reading, discussion, and publication of approved papers; for the delivery of lectures; and for the holding of an annual conference for the consideration of matters relating to hospital administration and construction, hospital management, medical relief, medical education in relation to hospitals, provident dispensaries, the Poor-law, and other kindred subjects. The membership of the association is active and honorary. Active members are those who at the time of their election are trustees, members of committee or executive, and professional heads of hospitals, without reference to sex or title. All applications for membership should be in writing and addressed to one of the secretaries. The executive officers of the association are the president, vice-presidents, secretaries, treasurer, and members of the council. The following officers were elected at the meeting:—President: Mr. H. Cosmo Bonsor, treasurer of Guy's Hospital. Treasurer: Mr. Conrad W. Thies, secretary of the Royal Free Hospital. Honorary secretaries: Dr. D. J. Mackintosh, the superintendent of the Western Infirmary, Glasgow; and Mr. William West, treasurer and chairman of St. George's Hospital. The council includes members from London, from the provinces, and from Scotland. Applications for membership are to be made to either of the honorary secretaries—to Dr. Mackintosh, at the Western Infirmary, Glasgow, or to Mr. West, at 3A, Lyall-street, Belgrave-square, London, S.W.

VASO-MOTOR AND OTHER PHENOMENA ASSOCIATED WITH CERVICAL RIB.

IN the paragraph on angio-neurotic œdema in his well-known text-book of medicine Professor Osler referred to the case of a man whose whole arm became swollen on exertion. In default of a more definite explanation it was at the time relegated to the group of angio-neuroses. Now, however, a case closely similar in essential features has come under Professor Osler's observation (which is published in the *American Journal of Medical Sciences* for April) and he has been able to refer the paroxysmal phenomena to the presence of a cervical rib. The patient, a woman aged 31 years, whose general health was irreproachable, found that after using her left arm for a while it became red and numb, and it felt swollen and hot, occasionally with a sensation of pins and needles. In the end it would become useless. When at rest the arm was natural, and work done with the fingers alone was quite free from uncomfortable results. The attacks were getting worse, and in an unusually severe one she had fainted. There was a pulsation above each clavicle which was certainly arterial, and more forcible on the left side. On deep pressure a firm resistance was encountered. The arm was free from muscular wasting and objective sensory disturbance. In a skiagram a cervical rib was discoverable on either side, that on the right being the larger. Cases of cervical rib have been reported in which the forearm became livid and swollen as the other symptoms progressed, and the explanation advanced for such phenomena throws light on the case of Professor Osler's patient. It is suggested that compression of the subclavian artery between the cervical rib and the scalenus anticus muscle permitted enough blood to pass through to the arm in ordinary circumstances, but that the extra demand created by muscular exertion could not be met owing to the arterial obstruction, the result being the phenomena detailed above. As Professor Osler remarks, there is an interesting analogy between the condition and that of intermittent limp. In his paper a third case is referred to, in which the presence or absence of cervical rib was not determined; but so close is the similarity between the symptoms in this case and those of the patient more recently under observation, that both are almost certainly susceptible of one and the same interpretation, as well, of course, as the case alluded to in Professor Osler's text-book.

MEDICAL INSPECTION OF INSTITUTIONS FOR CHILDREN.

THE National League for Physical Education and Improvement, which did good work in relation to the passage of the Act enforcing medical inspection of school children, has recently turned its attention to a kindred subject—that of the medical supervision of children in orphanages and in homes for the blind, deaf, and otherwise afflicted. With this object it addressed a series of questions to all known institutions of the kind which had accommodation for 40 inmates and upwards, and the answers obtained are summarised in a report which has been issued by the council of the league. It is to be regretted that of 135 institutions to which questions were sent only 47 sent replies, though even thus information is supplied as to a

population of over 13,000 children. How far the inclusion of data from the remaining homes would have modified the statistics obtained it is impossible to say, but it is natural to suppose that those institutions which were best organised with respect to medical supervision would answer, while those whose arrangements were less creditable would maintain a discreet silence. Hence there is some reason to fear that reliance on the figures given in the report may lead to unduly optimistic conclusions. Even so, the council of the league is driven to the conclusion that the existing arrangements are inadequate, especially among the smaller homes. The actual figures show that of the 47 institutions which sent replies, 38, or 80·8 per cent., had salaried or honorary medical officers on their staffs, and that in 17, or 36·1 per cent., provision was made for periodical inspection apart from actual recognised illness, these latter homes containing altogether 9869 children, or over two-thirds of all those dealt with in the report. In 41 homes medical examination of the children with respect to diseases of the eye, ear, nose, throat, and teeth is carried out on admission. Records of the physical development of the children are not kept as they should be, rather less than half the institutions keeping a register of weight, and other features being even less regularly noted. One institution has its own sanatorium for incipient tuberculous patients, with an open-air school, and another has a country branch for delicate children. The whole report throws valuable light upon a matter of considerable importance, which seems hitherto to have escaped public attention, and we welcome the action of the league in instituting the inquiry. Now that the question has been raised, we hope it may be found possible to elucidate the degree of medical care under which the children live in those institutions which have not replied to the circular.

IN consequence of the death of His Majesty King Edward VII. the Conference of the Child Study Society, arranged to be held at Tunbridge Wells on May 19th, 20th, and 21st, has been postponed to June 10th and 11th.—The Council of the Edinburgh University Club of London has decided to postpone the dinner of the club already announced for May 27th until July 22nd. Sir Robert Finlay has again promised to take the chair.

THE meeting of the Society of Tropical Medicine and Hygiene fixed for Friday, May 20th, is postponed to Friday, May 27th, at 8.30 P.M.

THE MANCHESTER INFIRMARY SITE.—The controversy over the question, "What must be done with the Manchester infirmary site?" still rages. The Manchester city council is as far from a decisive answer to the question, apparently, as ever it was; while the suggestions that flood the local papers are almost innumerable. One group would have a new Exchange, and a conference has been held between representatives of the directors of the Royal Exchange and the Exchange Subscribers' Association, with the Infirmary Site Committee of the corporation, but for the present the negotiations have come to naught. Another group is dead against the Exchange idea, and wants an open space, as a lung, where one would be certainly useful. But while some would secure "for all time a grand open space for thousands of our city toilers to enjoy a chat and a smoke in their leisure time," others say that instead of being a beauty spot, "it would become a lounging place for tramps and outcasts." Many more cling to the idea of an art gallery and free library. Other schemes are suggested in plenty, some more grotesque than others, but none that has seized on the public mind. In the meantime the old building, with all its associations of grave and gay, has been razed to the ground, the last portion to fall being the fine Ionic columns that adorned the entrance.

THE AIMS OF MEDICAL EDUCATION

AND THE TEACHING OF THE EARLY SUBJECTS OF THE MEDICAL CURRICULUM.

(An Abstract of the Introduction to the General Report upon Medical Education Prepared at the Request of the President of the Royal College of Surgeons in Ireland and Submitted to the Council of the College, February, 1910.)

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THE aim of medical education is to produce competent general practitioners, who can observe with accuracy, who can draw logical deductions from the facts observed, and who possess minds receptive of new ideas. It is not the aim of medical education to produce anatomists, physiologists, or bacteriologists; nor is it its aim to produce specialists in the various departments of medicine and surgery. Specialised scientific knowledge is rightly the product of post-graduate work.

The governing factor in the determination of all medical curricula is the time available. It may be at once admitted that the minimum period of five years is all too short for the evolution of a scientific practitioner from the raw material of the schools; but from the economic point of view a minimum of five years seems to be the practicable maximum.

During his years of study the developing practitioner not only gains nothing from his profession but has to live and to pay for his education. Even with the five years' minimum these charges represent a considerable capital outlay, and at its end a further outlay is usually necessary as a preliminary to earning more than the barest competency. It is obvious, however, that whatever period be selected as the compulsory minimum, the average duration of the student's course must exceed it. Not even the most brilliant can obtain their qualification in a shorter time, and even they, through ill-health or as a result of domestic or financial difficulties or, deliberately, through a desire to enter more fully into the study of some one or other of the subjects of the curriculum, may take more than the minimum time to obtain their qualification. Similarly for all the less brilliant. At the other end of the scale of intellect there are men who learn slowly and cannot hope to attain to the pass standard in the time officially contemplated. There are still others who only devote a part of their day to medical study, and these cannot hope to get through in less than six or seven years. Finally, there are the idlers who do not try to acquire knowledge until parental pressure becomes extreme. Under such circumstances the average time taken by students to pass through their course of professional studies alone gives little index of the reasonability of the demands of a curriculum.

At present medical education is in a state of unstable equilibrium, for among those interested there are two parties which have tacitly assumed that the five years' curriculum is incapable of producing scientific practitioners. The one maintains that the goal of formal medical education is to endow the student with a broad outlook upon the science and art of medicine; the other, that it is to equip the student with a knowledge of the details of treatment. A course of medical education based on this latter ideal must inevitably produce practitioners whose life work will be guided by rule of thumb, whereas all courses based on that must be essentially dishonest. Surreptitiously, it seeks to extend the minimum curriculum from five years to seven or eight. If the men who receive their qualification from a licensing body can afford and have the wisdom voluntarily to continue their pupilage as resident surgeons or physicians in some general hospital, or in attendance at some specialist clinique, for a period of two or three years, they may develop into highly efficient practitioners, but only in name will they be the product of a five years' course of studies. But these are extreme views, and between them the best solution of the difficulty is to be found. It is that the schools should insist upon just so much knowledge of recognised clinical methods as will make the young graduate a tolerably safe practitioner, and that the remainder of the available time should be devoted to instilling the broad outlook. In short, the time-limit compels compromise.

Amid the clash of vested interests a satisfactory compromise is difficult of attainment; a necessary preliminary to attempting it is to analyse the aim of medical education.

It is true that the ultimate aim is to produce competent practitioners; but the proximate aim is twofold: first, to educate minds to an understanding of the facts of life; second, to give sound, if elementary, technical training. Elementary the training must be; for the elements are essentials, and there is no time to produce universal specialists. For an examining body to strive to insist upon a detailed knowledge of the whole of medicine, surgery, and midwifery is wrong, and stultifies the whole object of education. To acquire such knowledge within the short time available demands cramming, and cramming is the curse of the medical schools. But apart from that, the most busy and successful practitioner does not carry all his available knowledge in his head. He knows in what books to look for unusual information. For this very reason every practitioner should have learned as a student how to use books. Such knowledge is the best prophylactic against premature senescence. In short, the proximate aims of medical education are:—(1) To teach a man to observe; (2) to strengthen his powers of thought and deduction; (3) to give him a broad outlook on the science of life; (4) to teach him the actual details of the treatment of injuries and emergencies and the common ailments; and (5) to teach him how to use books—the common memory of the profession.

To construct an outline of the aims of medical education is not difficult; it is not easy to solve the problems that hinder their achievement. It is a platitude that a school is made successful neither by its curriculum alone, nor by its equipment alone, but by these and the work of the men who are its teachers. But important as is the question of *personnel*, to obtain good anatomists, good physiologists, good pathologists as teachers is the beginning, not the end, of the problem of the teaching staff. To coördinate the work of the departments and thus to save all possible time is more difficult by far. It seems, indeed, as if what many schools lack is some coördinating authority which, through its control of the purse, has power to make its rulings operative. The composition of the controlling body must differ in different schools; but it is useless to expect the faculty to control the strong man whose energies overshadow theirs, or the scientist who is a poor teacher but whose researches are truly brilliant. If the faculty are friendlily disposed to one another, their friendship makes them lenient judges; if they are rent by dissensions, every decision is the result of faction voting. At best the decisions of a committee are the result of compromise; and when the medical curriculum, on a five years' basis, must itself be a most carefully balanced compromise, there is no room for further compromises. One solution would be to have an individual acting as controller and coördinator. Coördination of effort is the keynote of success in commercial enterprise; there seems no reason to suppose that coördination of effort will not make for success in the sphere of medical education; and just as men to manage, to direct, to control are needed in all large business undertakings, so they are required in all medical schools.

The duty of such a "managing director" should be to secure perfect coördination between the teaching departments, to prevent overlapping or lacunæ in the instruction of the student, to secure so far as funds permit a steady output of original work from the school's laboratories, to make provision for post-graduate courses, to lighten, so far as possible, the load of administrative work and financial responsibility which cramps and hinders the heads of all large teaching departments.

Granted that a competent staff, alive to the needs of modern education, has been secured, and granted that coördination of the departments has been provided for, it is essential to find and to adopt the best methods of educating the student and of imparting to him all requisite technical instruction. It has been hypothesised that the proximate aim of medical education is to teach a student to observe, to strengthen his powers of thought and deduction, to give him a wide outlook on the facts of life, and to make him familiar with the details of the treatment of injuries, cases of emergency, and the common ailments of mankind, and how to find any further information he may require in books. It is clear that this syllabus of training is readily divisible into two parts, the first purely educative, the second almost as purely technical. Methods suitable for imparting instruction in the educational part of the curriculum may be altogether unsuitable when the technical portion is reached.

But this division of the aims of medical education is not the greatest difficulty that confronts him who would recommend the adoption of particular methods of instruction. The real difficulty is presented by the extraordinary differences in mental development shown by the students within the walls of one school. Not only are the natural mental powers of students vastly different, but of a group of freshmen some are callow schoolboys, others graduates in arts, still others are well versed in chemistry, physics, and perhaps biology. Each student presents a different problem. In some cases it is necessary to educate senses; in others, minds; and if that be once effected the subsequent technical training presents no real difficulty. But senses and minds will never be educated if students are treated as driven cattle. From the very earliest moment of their entry into the school of medicine the students should be, must be, if the best is to be made of them, taken as individuals and studied by their teachers. In fact, if this be faithfully done at the outset of their medical career, it matters less how they are dealt with later. The start of the curriculum is the critical part, and it is necessary that the methods adopted there should be far more elaborate and the supervision exercised far closer than is advisable in the later subjects. Whether the studies of the curriculum be regarded from the educative or from the technical point of view, they divide themselves sharply into two groups. In the first group the normal is studied; in the second the abnormal. This division is readily recognisable, and it is convenient to utilise some natural subdivision of the courses of the curriculum to mark off the subjects in which close supervision should be exercised from those in which the student should be encouraged to accustom himself to the apparent absence of higher control; for there are few things so demoralising to the student as unequal treatment in the different departments which he has to attend in any one term.

The subsequent discussion of methods of education refers exclusively to the earlier subjects of the curriculum—viz., the subjects of the first and second professional examinations. Every teacher of these early subjects must have observed, with feelings akin to despair, the manner in which many students reduce their whole course of medical study to chaos by their failure to pass the subjects of their first professional examination, and failures are far more often due to inexperience than to laziness or real stupidity. In the present writer's opinion much of the difficulty experienced by students at the commencement of the curriculum is due to their failure to appreciate the importance and bearing of their practical work. To get practical work well done it is necessary to convince the student that the doing of it is worth while. A student's outlook is limited, and "worth while" to him means obviously worth while. "Obviously worth while" in turn means a direct help to him in getting through his examinations. Now it is impossible to train a student to observe for himself without making him do practical work, and it is not easy to devise an examination which will fairly test a student's power of observation and of doing practical work. It is easy, however, to discover a student's aptitude for these things by noticing his progress from day to day throughout the whole course in any one subject.

The daily work is the work that tells at an examination; but the student frequently does not realise this and wastes the most valuable part of his education. The whole level of medical education will be raised when the student is compelled fully to realise the importance of regular and diligent performance of practical work. There does not seem to be any way of doing this except by making the proper performance of practical work throughout whole courses an integral part of the professional examinations. To do so would be to introduce no new principle into medical education. Already attendance at courses is insisted on. All that is now required is to carry this principle further, and to make really diligent and regular study compulsory. Not only is it advisable to make really diligent attendance at practical courses count as a part of the professional examinations, but diligent attendance at lecture classes should

also count. Frequent written examinations do not diminish but intensify the educative value of lecture demonstrations, and are in themselves highly educative. Very short papers once a week are of the greatest possible value. They teach students to arrange their knowledge and to express themselves clearly, and their frequency prevents cramming. To keep abreast with them at all students have to work regularly. To teach regularity in work is one of the objects of a medical school. Alternating periods of idling and cramming are the result of occasional examinations. With weekly examinations, examination fever ceases to be a trouble, and a high uniform level of work is maintained. Even the examinations are robbed of their terror and become highly educative. There seems every reason to believe that to make the work done from day to day count towards a pass in the professional examination would do much to solve the problems that surround us. But the professional examination would require to be retained as a goal, and should be treated by the teacher as the grand revisal of the class work. The utilisation of the results of the class work as an integral portion of the professional examination may be objected to as involving too close a supervision over the students. It must be remembered that it is only recommended by the present writer in the case of the subjects of the first and second professional examinations with which the present discussion is alone concerned.

With regard to the manner of instruction, and still dealing purely with the study of the normal, it may be said without hesitation that the set lecture illustrated by blackboard drawings and diagrams alone is an anachronism. Practical work is the essential thing; but as time is short and must be saved there must also be lecture demonstrations. It is almost useless to turn students loose in a laboratory to do something. They must be told what to do, and shown how to do it, then they must go and do it for themselves, and through it all the teacher must weave threads of connecting thought. To do this demands that the subjects studied are so arranged that the thought may grow naturally and easily, and above all, that regardless of departments, subjects are dealt with as a whole. For example, it should be impossible that a student should have described to him the macroscopic structure of the human heart one winter; the microscopic structure and something of the phylogenetic and ontogenetic history of the same organ at different parts of the next summer; the circulation of the blood and the function and sounds of the heart the following winter; that he should himself make a dissection of the organ the summer after that; and that he should be permitted to delay the successful demonstration of his understanding the principles of the construction of pumps until a date even subsequent to that again. At present in many schools he may do this, and the crowning absurdity is that before he has commenced his disjointed studies he may be working in the wards of a general hospital. Such a travesty of education should be impossible. The student has not time to waste. He should be helped in every possible way to acquire sufficient knowledge of the normal to enable him to understand the nature of disease and its treatment. To save time in the early years of the curriculum is to gain time for the study of the clinical subjects.

SANITATION IN INDIA.

III.[1]

HOSPITALS AND DISPENSARIES (*concluded*).

Eastern Bengal and Assam.

Colonel R. Neil Campbell, I.M.S., furnishes the report for the hospitals and dispensaries of Eastern Bengal and Assam. On the last day of the year 1908 there were 522 of these institutions open. The total number of in-patients rose from 24,455 in 1907 to 26,246 in 1908, and the out-patients numbered 3,245,167, in comparison with 3,059,349 for the previous year. The reasons given for the increase of the patients are the progressive popularity of the institutions and the unhealthiness of the localities, while in the case of Demagiri the admissions were increased by coolies imported for the construction of the roads from Demagiri to Lungleh.

The largest number of admissions was due to worms, this being 562,590, or 17·2 per cent. of the total treated; the figures in 1907 were 507,304, or 16·6 per cent. Malarial fevers and skin diseases come next. There were 201 cases of carcinoma and 173 of sarcoma. Dysentery, and especially cholera and diarrhœa, showed a marked decrease. Goitre was particularly prevalent in the Naga Hills, there having been 2590 cases. The surgical operations which were performed amounted to 77,363, as compared with 76,366 in 1907. The operations included amongst others those for aneurysm, operations on the skull and brain, laparotomies, nephrotomy, and operations for stone (112).

Central Provinces.

In the report for 1908 for the Central Provinces by Colonel P. A. Weir, I.M.S, we are informed that 269 dispensaries were at work, treating both indoor and outdoor patients to the number of 1,731,282. The chief diseases were malarial fevers, skin diseases, ulcers, eye affections, and respiratory and digestive diseases. Malarial fevers headed the list. Cholera occurred in 17 districts, whilst dysentery and diarrhœa were more prevalent.

Madras.

The General Hospital, Madras, treated 52,243 out-patients and 7512 in-patients; the average of the latter was the highest of ten years, a marked increase being shown both amongst Europeans and non-Europeans. With regard to the former, the total number in the last ten years has been falling off, probably due to the fact that the private practitioners in Madras are yearly increasing in number. This would be more likely to affect the European than the non-European population. 7396 operations were performed. Cholera was present in an epidemic form in Madras from August to October.

Coming now more particularly to the facts noted, Major C. Donovan, I.M.S., in his summary makes some interesting remarks on certain diseases In regard to malaria, his method of treatment is to give a single dose of 30 grains of quinine, with "the happiest result as far as the cure of the disease is concerned." He quotes a case in which three species of malarial parasites were present on the admission of the patient. After the dose of quinine he remained free for 19 days, when the temperature rose, but only one species was then found. After another 36 days of apyrexia a second relapse took place, when only a second species (a different one) was found. This would favour, in a way, Laveran's views that the parasite of malaria constitutes a single species with three varieties. A case of cerebral malaria is recorded; the patient was admitted moribund, and the cerebral capillaries were plugged too extensively to admit of relief. A case of blackwater fever is recorded in which quinine in two doses of 10 grains brought on the hæmoglobinuria; and Major Donovan throws out the suggestion that the severe form of paludal fever is due to a distinct form of laverania, the parasites being of a peculiar shape.

Kala-azar gave rise to 59 admissions; the cases were all diagnosed except four by the detection of leishmania in the peripheral circulation; in one of the cases after death this organism was found in the solid viscera. This disease is very limited in the Presidency, being confined to the municipal boundaries of the corporation of Madras, and to Blacktown particularly. Major Donovan gives a succinct account of the history of the parasite and discusses its proper place in classification; he does not now locate it amongst the sporozoa. With regard to its transmission, he made observations by feeding bed bugs on kala-azar patients, but without success, and on searching for some other blood-sucking insect he came across a red and black bug which may possibly be a causative factor. In the treatment of the affection he has administered quinine by the mouth and by intramuscular injection, liquor arsenii et hydrargyri, both with and without vinum antimoniale, fuchsin, and thymol. The amelioration under fuchsin, which at first seemed to be satisfactory, proved only transient. One case, however, is narrated in which, 18 months after the treatment, the patient is in perfect health.

Major Donovan also relates a very interesting case in which he states he mistook kala-azar for typhoid fever. A patient was suddenly taken ill with a continuous temperature of 104° F. (more or less) for a week before admission. The temperature then remitted, and after 35 days came to normal by lysis exactly like typhoid fever. There were pink roseolæ, tympanites, right iliac gurgling, slight enlargement

[1] Nos. I. and II. were published in THE LANCET of May 7th (p. 1289) and 14th (p. 1369) respectively.

of the spleen, and Widal's reaction (1–100). On the twenty-eighth day of apyrexia he was discharged apparently cured, but a few days after he returned with a remittent fever of 101°–103°. The Widal reaction was now negative, and two leishmania organisms were found in the blood. But could not the patient have really had enteric fever in his first attack?

In the treatment of amœbic dysentery in early cases, Major Donovan has found Dover's powder to act like a charm; this, if found elsewhere to be the case, is an observation of the greatest value.

Captain E. W. Browne, I.M.S., relates an interesting case of kala-azar in which, after a severe erysipelas of the face and scalp, the patient began to put on weight, and his spleen so steadily diminished in size that there are hopes of his entire recovery. Other cases have been recorded in which recovery has taken place after some acute illness or complication, and this one may eventually be classed with them. He also records nine cases of seven-day fever, in one of which there was a profuse, somewhat measles-like rash.

THE JAILS.

We have received the reports of the jails for Eastern Bengal and Assam, the North-West Frontier Province, the Central Provinces, Bombay, and Bengal.

Eastern Bengal and Assam.

Lieutenant-Colonel R. R. Weir, I.M.S., in his administrative report of the 59 jails of Eastern Bengal and Assam, shows that 38,321 prisoners were admitted during the year 1908. Of these Mahomedans headed the list, next came the Buddhists or Jains, and the lowest amongst the native religions were the Hindoos, although the increase in this class was considerable. There was a satisfactory decrease in the number of juvenile prisoners admitted during the year.

With respect to the vital statistics, the daily average number of prisoners was 7766 with a daily admission rate per 1000 into hospital of 34·62, and a death-rate of 31·29. As to the diseases affecting the prisoners there were 16 cases of cholera with 14 deaths. Dysentery on the whole showed a decrease compared with 1907, but was markedly more prevalent in the jails of Dacca, Rampur-Boalia, and Noakhali. In the last there was no mortality, but this was high in the others; overcrowding was responsible for the increase. Malarial fevers were more prevalent in 1908, and so was pneumonia. There were 27 admissions for enteric fever, 26 of which occurred in the Rampur-Boalia jail, due, according to Lieutenant-Colonel Weir, to the prisoners having to bathe in a tank lying outside the jail, whilst also the trenching of the night soil was under suspicion. There were cases also of epidemic dropsy and beri-beri.

Bombay.

Major J. Jackson, I.M.S., furnishes the annual report for 1908 for the Bombay jail department. The number of prisoners in all the Bombay jails was 90,408. One very important subject is commented on by the Inspector-General—namely, the recidivist question. He holds that if every proved habitual criminal was deported for life to the Andamans or was sentenced to indeterminate punishment, the good done would be enormous. This class forms only about 13 per cent. of all the prisoners in the Bombay Presidency; and it is the source of corruption in prisons, of expense to the police department, and of injury to the public. Major Jackson's remarks concerning the classes of criminal, long term and first offenders, are well worthy of consideration.

The ratio of deaths per 1000 was 17·4, against 20·3 in 1907; this is the lowest death-rate on record, with the exception of 1905, when it was 17·1. This is extremely satisfactory, as malaria was very prevalent in some districts, whilst at Hyderabad there was an epidemic of cerebro-spinal meningitis. Major Jackson pays a well-earned tribute to the superintendents and medical officers on the attainment of this satisfactory result.

Regarding the prevalence of malaria, Yerarda prison shows the beneficent effect of an issue of quinine throughout the year, as there were here only 287 admissions, compared with 673 in 1907. The two outbreaks of cerebro-spinal meningitis resulted in 12 deaths. The outbreak showed the urgent necessity for enlarging and improving the hospital of the prison. As Major Jackson says: "To treat in such a hospital pneumonia, dysentery, and cerebro-spinal meningitis under prison conditions is a heart-breaking task."

Bengal.

The yearly report of the Bengal jails for 1908 is furnished by Lieutenant-Colonel W. J. Buchanan, I.M.S. There have been received during the year 112,028 male and 4721 female prisoners. This was a very great increase over the admissions for 1907, amounting to over 1500 prisoners. This number is sufficient to fill four or five district jails of average size. The necessary overcrowding had naturally a bad effect on the health of the prisoners.

Under the wise administration of this energetic medical officer a juvenile jail has been started, and proposals are before Government for a special jail for habitual criminals of the most determined character, so that the two extremes of the present prison administration will soon be dealt with in a special way. The improvement in the pay of the warders has given considerable satisfaction, and they have well earned it, for their duties are onerous and none of them get a full night's rest in bed, every warder having to take duty during some watch of the night. In order to remedy this Lieutenant-Colonel Buchanan has asked for a very considerable increase of the warder staff. He has also drawn attention to the buildings attached to the jails, much improvement and enlargement being necessary, while the non-advisability of using prisoners as warders is dealt with, this system having proved a failure—in fact, nothing that is important seems to have escaped his notice as he passes in review the matters connected with the various jails under his administration.

With regard to the diseases that were rife during 1908, cholera appeared in 16 jails, causing 57 deaths. The disease was always introduced from outside. Dysentery showed an increase, and was of a bad type; and Lieutenant-Colonel Buchanan here gives an appreciative notice of the good work performed by Captain W. C. H. Forster, I.M.S., at Midnapore. Owing to the shortness and early cessation of rains, there was a decline in the number of cases of malaria. Quinine was in all the jails given as a prophylactic.

North-West Frontier Province.

In the excellent report by Lieutenant-Colonel G. W. P. Dennys on the jails of the North-West Frontier Province space compels us only to notice his remarks concerning the prophylactic use of quinine in malaria. Under his direction the superintendents of the Dera-Ismail-Khan and Peshawar jails made observations on three gangs of men. The first gang received no quinine at all from July 1st to Nov. 30th; the percentage of sick from malaria was 39·3. The second gang received 5 grains of quinine every day after the morning meal; here the percentage was 7·1. The third gang received 15 grains on the fifth and sixth day, with a resulting percentage of 10·7 sick from malaria. The first method of giving the quinine here was the best. But at Peshawar a curious result is shown. The first gang of 53 men receiving no quinine had 25 admissions of malaria during the same period; the second gang of 53 taking 5 grains of quinine daily had 49 admissions; and the last gang of 53 taking 15 grains every fifth and sixth day had 53 admissions from malaria. Major A. J. Macnab, I.M.S., under whom these cases were, can offer no explanation for this result.

Another interesting fact in the report is the reappearance of typhus fever in the Peshawar jail after an interval of seven years. The management of the cases by Captain E. C. Hepper, I.M.S., is deserving of the highest commendation. He treated the outbreak on the supposition that the bed bug was the propagating agent. The sick and "contacts" were isolated. The hospital ward was disinfected, and the iron cots in which the prisoners slept were exposed to the action of fire and were also washed with perchloride of mercury. One case only occurred after these precautions had been taken. Captain Hepper has since instituted a more satisfactory method of ridding the iron cots and cubicles of these vermin by means of the Vesuvius blow lamp. The use of these lamps now constitutes a regular ritual in jail hygiene.

LUNATIC ASYLUMS.

Bengal.

The triennial report of the lunatic asylums in Bengal for the years 1906–08 is by Colonel R. Macrae, I.M.S. A great improvement in the management of these institutions has occurred since 1906. Instead of the duties being performed as heretofore by the civil surgeon of the district—whose multifarious duties and perhaps want of special knowledge interfered with his efficiency—a separate expert medical officer has been appointed and has held charge at the asylum

at Berhampore. It is to be hoped that this will be the rule elsewhere.

Statistics of the triennium under notice are embodied in the report, relating to admissions and discharges, religion, sex and age, previous occupation, types of insanity, causes, and establishment. There was an average of 851 cases in the triennium as compared with 822 in the previous one. There has been only one case of cholera. Fevers have decreased owing to the use of quinine as a prophylactic. Bowel complaints have steadily decreased, and here it is noted that the treatment by anti-dysenteric serum met with but little success. Tuberculous patients undergo the open-air treatment in tents to their great benefit. Mania was the chief predominating form of lunacy.

Central Provinces.

Colonel P. A. Weir, I.M.S., furnishes the report for these institutions in the Central Provinces for the triennium 1906–08. The principal administrative change in these provinces has been the removal of all female lunatics from Jubbulpore to Nagpore in 1907, where the site is well drained and capable of expansion. The admissions showed a distinct tendency to increase, due partly to the high prices and hard times rendering it difficult to support insane relatives, and partly to an increasing trust in asylums. With regard to the health of the lunatics, that at Jubbulpore was good, but at Nagpore not so good, the daily average of sick for the three years of the triennium being respectively 2·66, 2·78, and 2·06, and 4·25, 3·07, and 3·07. Mania was the most frequent type, existing in 90 per cent. of the admissions for the triennium; then came melancholia with 6·5 per cent.; idiocy, 2·0 per cent.; and dementia, 1·5 per cent. Of the cured and improved cases mania again formed 93 per cent. Ganja smoking was found to be the most frequent of the physical causes.

Eastern Bengal and Assam.

In his triennial report for Eastern Bengal and Assam for the years 1906–08 Lieutenant-Colonel R. Neil Campbell, I.M.S., states that there were 328 admissions, compared with 284 in the previous triennium. Ganja smoking here again headed the list of causes, whilst mania was the most frequent type of insanity. The death-rate for 1908 was greater than in 1906, but less than in 1907. Tuberculosis was the chief cause of death, but this is now lessening owing to the careful segregation of tuberculous patients. The other chief causes of death were exhaustion of mania, cholera, anæmia, remittent fever, epilepsy, and bowel complaints. The cases of cholera were all sporadic. The rate of mortality in 1908 was lower than in all the other provinces of India, with the exception of Burma and Bengal. The small steady increase from year to year in the number of lunatics treated in the asylums, and the constant reports of overcrowding evidently give support to the proposal, which is now under discussion, to build a central asylum for this province.

VACCINATION.

The reports concerning vaccination that we have received give the following statistics:—

Province.	Number of vaccinators.	Number of operations.	Number of primary operations.	Number of revaccinations.	Successful results per cent.	
					Primary.	Secondary.
1. North-West Frontier Province	35	91,368	81,181	10,187	98·38	82·14
2. Eastern Bengal and Assam ...	1130	1,449,658	1,349,379	100,279	98·80	74·19
3. Bengal	2653	2,241,576*	1,936,869	304,707	99·37† 98·60‡	62·64† 60·39‡
4. Central Provinces	—	639,647	553,438	86,209	99·10	74·99
5. Burma	259	382,336	—	—	93·68	—

* Returns from Pal Laharu and Orissa received too late for inclusion.
† Rural. ‡ Municipalities.

Nature of lymph: 1. North-West Frontier Province: Glycerinated lymph, nearly all; animal lymph, small number. 2. Eastern Bengal and Assam: Glycerinated vaccine; humanised vaccine in Rajshahi only. 3. Bengal: Lanoline lymph, mostly; lymph direct from calves; arm to arm. 4. Central Provinces: Glycerinated lymph, 99·89 per cent.; lanolinated lymph, 0·04 per cent.; fresh calf lymph, 0·03 per cent. 5. Burma: Glycerinated lymph, mostly; lanoline vaccine; quinated vaccine.

Returns furnished by: 1. North-West Frontier Province: Lieutenant-Colonel W. P. Dennys, I.M.S. 2. Eastern Bengal and Assam: Major E. Wilkinson, I.M.S. 3. Bengal: Lieutenant-Colonel F. C. Clarkson, I.M.S. 4. Central Provinces: Colonel P. A. Weir, I.M.S. 5. Burma: Major C. E. Williams, I.M.S.

Commenting on the above large amount of work, we find that no less than 4,804,575 vaccinations were performed; nor does this number represent the whole extent of this beneficent operation in India, for the returns from Bombay, Madras, and the Punjab are not included. To any medical officer in charge of a native regiment 30 years ago the beneficial effects of vaccination must be at once apparent. At that time probably the major number of recruits presented well-marked signs of small-pox; now it is the exception. We commend this fact to the notice of anti-vaccination advocates. It is satisfactory to note that the practice of inoculation is dying a natural death. Doubtless as soon as the religious convictions have been overcome the natives of India will all participate in the benefits of vaccination. An example of such prejudice occurred in one of the villages of Eastern Bengal and Assam, where vaccination was not accepted through fear of offending the goddess Basanta. In this village the highest death-rate from small-pox was reported.

The Government of India has been indebted in connexion with vaccination to the generous assistance of influential zemindars, like that of Rai Mani Lall Singh Roy Bahadur of Chakdighi.

In concluding these necessarily somewhat abbreviated notices of the Sanitary Reports from India, we cannot help expressing our admiration for the enormous work done by the officers of the Indian Medical Service. That service is, indeed, a most valuable asset to the Indian Government, and this is apparent whether we look at the subject in its prophylactic aspect, as in the matter of small-pox or malaria, for example, or in its curative aspect, as evinced by the magnitude and number of its surgical operations. Whilst all the above reports are evidences of unremitting labour, we would especially draw attention to the excellence of those drawn up by Lieutenant-Colonel Dennys, Colonel Macrae, Major Williams, and Colonel King, which are, indeed, models of what reports should be.

INTERNATIONAL HYGIENE EXHIBITION, DRESDEN, 1911.

A MEETING took place on Thursday, May 5th, at the Hotel Cecil, in connexion with the International Hygiene Exhibition, which is to be held in Dresden next year.

Sir WILLIAM LEISHMAN, on taking the chair, pointed out that the forthcoming exhibition promised to be a still more imposing one than he had at first been led to believe. He referred to the preliminary work of organisation, and then called upon the organiser of the scientific department to report on the action which he had taken since the matter had been placed in his hands.

Mr. H. W. ARMIT gave a short account of the work, mentioning that the assistance of the Board of Trade and the Foreign Office had been promised, and that the Colonial and India Offices were forwarding the invitations to participate in the exhibition to their respective Governments. After some lists of names had been read, a British National Committee, consisting of some 271 ladies and gentlemen, was elected. Mr. Armit pointed out that he had met with considerable difficulty in compiling some of the lists, since lists had been set up in Dresden which included many names which he had been unable to trace. It was only after much patience had been expended that he had been able to issue invitations to the best representatives of hygiene in the United Kingdom. He had been forced to defer the work of selecting representative hygienists in the Colonies and India, but he was now in communication with a number of Canadians, Australians, and South Africans, as well as many representatives of the Indian Empire, from all

of whom he hoped to receive assistance in this task. With regard to the posts of honour, he would suggest that he be instructed to approach H.R.H. Princess Christian to beg her to consent to become patroness. Her Royal Highness had intimated that she would wish to receive a list of the committee when it was elected, prior to determining whether she could join the committee. With regard to the post of President, he reported that he had consulted a number of active members and had received several valuable suggestions.

It was resolved that H.R.H. Princess Christian should be asked to become patroness to the British National Committee, and that certain noblemen be approached in a definite order with the view of one of them accepting the office of president. A number of names for vice-presidents were then chosen. The next business was the election of the Executive Committee. Mr. Armit read a list of names of experts for each group and sub-group of the exhibition, explaining that if the meeting pleased to elect a large committee the work would be considerably lightened, since it would be possible to avoid meetings by appealing to one or other expert on the lists for advice and reporting the action taken on this advice to the other members by circular letter. The Executive Committee consists of 121 hygienic experts and has the power of coöption. Care has been exercised to include in each group such prominent officials, medical officers, and other experts as would guarantee success to the undertaking. Especial representation has been given to organisations dealing with the hygiene of women's work and of infant life.

A vote of thanks to Sir William Leishman for taking the chair was passed by acclamation.

ENGLISH-BREWED LAGER BEER.

IT has been said that the English temperament is averse to light beers and that the climatic environment of these islands encourages the consumption of robust liquors. The fact, however, that in countries situated further north than the British Isles, and which are more remote from the influences of the Gulf Stream, the consumption of light brewed beers is the rule, discounts this view. England, Scotland, and Ireland undoubtedly are the chief producers of strong brewed malt liquors, and elsewhere very little attention is paid to their production on any significant scale. This position, however, has long been threatened by a very real demand on the part of the public for beverages which, if alcoholic at all, shall contain as far as possible a minimum of this stimulant. A score or so of years ago the idea of brewing at Burton, the world-known centre of the brewing industry, light beers equal in character, quality, and palatability to the lager or bock beer of the continent, was scorned, and yet to-day more than one well-known firm of brewers at Burton have devoted large sums of money to the erection of a plant for the production on a large scale of a light malt and hop liquor offering the pleasing, wholesome qualities of the light beers known in this country under the generic term of "lager."

Lager implies a stored or matured beer, the word itself meaning a storehouse. Storage implies time, and time means expense. The essential difference between English beer and lager beer is that the former is brewed at a comparatively high temperature and the latter at a low temperature. The work of the yeast in lager beer proceeds at the bottom of the vat, the so-called bottom or sedimentary fermentation, while in the brewing of English beer the fermentation at the higher temperature proceeds at the surface and much more rapidly. Surface fermentation succeeds therefore in preparing briskly foaming and strong beers, bottom fermentation produces the cold light lager. The products are different in flavour, in nutrient value, in alcoholic strength. Some people imagine that lager beer is flavoured with garlic. That is not the case. The peculiar taste has its origin entirely in the mode of fermentation adopted. A matter of genuine dietetic importance is the fact that while lager beer contains a higher proportion of nutritive substances than ordinary brewed Burton ale the amount of alcohol in it is decidedly less, while the process is conducted throughout not only in the cold but under seal. Lastly, the beer is preserved by a carefully conducted method of pasteurisation, the object of which is to keep the product in a sound condition, the control over this process being such that no disturbance of the delicate flavour is incurred.

The foregoing account applies at all events to the Burton lager which Messrs. Peter Walker and Son have recently placed upon the market, the various stages in the manufacture of which our Commissioners have been permitted to see. The plant at Burton is admirably designed and spotlessly clean, and the process is kept under control by refrigerating machinery adapted specially for the purpose. After considerable storage in the cold, during which the beer matures, gets brilliant, and assimilates its own carbonic acid gas, it is delivered under pressure straight into railway vans containing two capacious cylinders surrounded with blocks of ice. It is then delivered at the London depôt where the beer is bottled and sterilised. Once it has left the fermentation vat the beer is religiously guarded against any risk of contamination by contact with air. Samples taken off the open market were submitted to analysis in THE LANCET Laboratory, and samples were also examined which were taken direct from the brewery by our Commissioners. The analyses were as follows:—

ANALYSES OF ENGLISH-BREWED LAGER BEER.

	Sample 1 (London market).	Sample 2 (direct from Burton brewery).
Alcohol by weight	3·71 per cent.	3·71 per cent.
Alcohol by volume	4·63 ,, ,,	4·63 ,, ,,
Proof spirit	8·13 ,, ,,	8·13 ,, ,,
Extractives	5·20 ,, ,,	5·56 ,, ,,
Malt sugar	1·64 ,, ,,	1·65 ,, ,,
Dextrin	2·80 ,, ,,	2·90 ,, ,,
Protein	0·50 ,, ,,	0·48 ,, ,,
Mineral matter	0·26 ,, ,,	0·25 ,, ,,
Phosphoric acid	0·045 ,, ,,	0·05 ,, ,,
Volatile acidity	0·036 ,, ,,	0·048 ,, ,,
Fixed acidity	0·261 ,, ,,	0·216 ,, ,,

The analysis brings out some important points to which already slight reference has been made; the relation of nutrient to stimulant is perhaps the most interesting. It is quite obvious that when fermentation is not pushed to anything like its limit the alcohol will be trifling in quantity, and correspondingly so much malt sugar will be unconverted. That is the case with lager. On the other hand, when the fermentation proceeds rapidly and for some time the sugars are almost completely converted, so that a relatively high alcoholic strength is obtained and a correspondingly low nutritive value. The point is of importance also in regard to the great temperance question. There can be little doubt that when alcohol is indulged in even moderately it is always better taken with food. Lager beer of the character and quality shown in the above analysis satisfies this physiological ordinance, since it supplies nourishment considerably in excess of the alcohol present. In ordinary beers the reverse is the case, the amount of alcohol sometimes doubling that of the malt extractives present. Another important dietetic point in regard to lager beer of the type of that brewed by Messrs. Peter Walker at Burton is that it contains much less hops than ordinary beer, and the fact is often overlooked that the drowsiness which is known sometimes to follow the drinking of strong beer is not entirely due to the alcohol but partly to the soporific properties of the bitter principles of the hops.

There is, of course, room for all grades of beer so long as common-sense is exercised in regard to the amount consumed, and there can be little question that from a hygienic point of view the balance of evidence is in favour of light lager beer. Therefore the step which a large brewing firm like that of Messrs. Peter Walker at Burton have decided upon is one which should earn the support of all those jealous for the sobriety and health of the community, and who are jealous also for the success of British industry. The lager beer brewed by them is a practically temperance beverage, so small is the quantity of alcohol present, and, moreover, it has a quite attractive, refreshing, clean taste, but, like the continental lager beers, with which it compares most favourably, it should be kept and consumed cold. It contains no objectionable preservatives and no foreign bitter substances.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Hove.—The carrying out of the provisions of the Notification of Births Act in Hove has led to an interesting experiment as regards the feeding of nursing mothers. It was found that some of the mothers, although anxious to nurse their offspring, were unable to do so owing to the fact that they had insufficient food themselves, and as a result the child was relegated to cows' or condensed milk. To obviate this a mothers' and babies' fund was started by Councillor H. M. Taylor, and free dinners were commenced at the beginning of March of last year. The routine is as follows. The health visitor reports the cases of needy mothers to the medical officer of health, and, if he approves the selection, these women are furnished with tickets which are available at several restaurants, at one of which the mothers can take their dinner. During 1909, from March onwards, 32 mothers were supplied with 2322 dinners. In 4 instances the dinners lasted a month, in 11 less than three months, in 8 for from three to four months, in 5 from four to five months, and in 2 for six months, while 2 continued into 1910. As regards the results there seems to have been no doubt as to the advantage which accrued to the mothers, but it was difficult to obtain data whereby to assess the benefit to the children. Of the children whose mothers were being thus nurtured the results were disappointing in 4, and the dinners were stopped; 4 were benefited, but from other causes were not in a satisfactory condition; 2 derived advantage during the short time their mothers were being fed; 3 were enabled to be fed, although the father was ill or out of work; 2 were premature babies which did well; two twins were breast-fed for nearly five months, the mother not having formerly been able to suckle her young; 2 recovered from severe attacks of whooping-cough; 1 was, it is thought, possibly kept from developing rickets; another was one of the only two survivors out of a family of 7; another which was cross before became contented. In two cases the mothers' milk which had ceased was replenished, while the babies were enabled to be fed for three and four months longer. The remaining 8 progressed favourably. Dr. A. Griffith, the medical officer of health, regards the arrangement from the point of view of public assistance as undoubtedly a reasonable and economical one, and the cost seems very small. For 26*s.* a good and sufficient dinner for six days weekly was supplied to each mother for three months. This arrangement is somewhat on the same lines as that adopted in connexion with the anti-tuberculous dispensaries in Paris, and it was also in France that this idea of feeding suckling mothers originated.

Sidmouth Urban District.—Dr. T. H. S. Pullin is opposed to the notification of pulmonary tuberculosis because *inter alia* of "the terrible social and domestic interference and discomfort it would occasion and the financial loss to lodging-houses and hotels" which would result from the official inspections which would ensue. In his opinion, as well as that of the Devonshire county medical officer of health, this remedy "is not of the sanitary, but of the suppression type," and he holds that "to suppress a disease by a careful system of watching is not uprooting its cause, but rather straining after a pretended than a real victory." But it is surely possible to control the cause of a disease as well as to make use of the information obtained by a well-devised system of voluntary notification. Dr. Pullin has had an extended experience as a private and public vaccinator, and in that time he has never encountered a case of "insusceptibility," and only rarely of failure of one insertion out of four.

Swinton and Pendlebury Urban District.—Mr. Samuel Hosegood's experience as school medical officer during 1909 has led him to the conclusion that infectious disease is not spread to any appreciable degree by school attendance, and he regards home influence and surroundings as mainly responsible for such spread. He also sees no difficulty in dealing with the bulk of cases of infectious disease in their own homes instead of in an isolation hospital. We doubt whether many of Mr. Hosegood's colleagues in the public health service would agree with him as to this latter point, and it is, we think, generally conceded that it is impracticable to isolate cases of infectious disease in the small and often contracted homes of the poorer classes. It is true that without hospital accommodation there is frequently only one case in a household, but such an occurrence is largely explained by the circumstances. Mr. Hosegood embodies in this current volume the report of the lady health visitor, Mrs. H. A. Johnson, who tells us that there has been a marked improvement respecting the prevention of diarrhœa owing to the fact that many of the mothers are sterilising their milk and storing it under better conditions during the summer months. She meets with many difficulties in her attempts to control bronchitis and pneumonia. Parents postpone seeking medical advice; they give the baby patent cough mixtures, many of which contain opiates, and even when a medical man is called in the friends interfere with the carrying out of his treatment both as regards food and medicine. "Teething" is, she finds, responsible for the fact that medical men are not called in more frequently, since all the ailments of infants during the teething phase of life are liable to be ascribed to this process.

Goole Urban District.—Dr. A. M. Erskine gives an interesting account of diphtheria prevalence in this district, in the control of which modern methods of prevention were adopted. Owing to cases of the disease at the beginning of the year swabs were taken in the course of two days from the throats of the 525 children attending certain schools, each child being sent home directly its throat was swabbed. The examination was completed on Friday, and on Sunday the results were telephoned to the medical officer of health. Nine out of the total number examined harboured diphtheria germs, and so, Dr. Erskine adds, "were the means of continuing as carriers of the disease to others." The schools were cleansed and fumigated, and on Monday morning the nine carriers were excluded, the children being either treated by their own medical men or sent to the sanatorium where they were kept until the swabs from their throats yielded negative results. One of the carriers subsequently developed diphtheria, but it is not apparent whether this was one of the hospital cases or not. Presumably the children who were sent to the hospital were kept in observation wards and were not put into the diphtheria pavilion. No further cases occurred up to the end of 1909. But in connexion with another school things developed differently. Here there were found in one class a child who had had diphtheria three months before, another with a nasal discharge, and three teachers with sore-throat. Of the 42 children in the invaded class from whom swabs were taken six yielded positive results. The children in question were excluded, but later four fresh cases were notified from the invaded department. Apparently the resources at the disposal of the authorities concerned were overtaxed, and there is no doubt that this method of controlling diphtheria does involve an enormous amount of protracted labour on the part of both the sanitary and school authorities. Dr. Erskine, as the result of his observations as to the persistence of diphtheria bacilli in throats, finds that in bright sunny weather the carrier cases soon lose their bacilli, whereas in dull, wet weather it requires weeks before a negative result is obtained. He concludes that climatic conditions affect the life of the organism in its natural habitat—the throat and nose.

County Borough of Burton upon-Trent.—Dr. J. M. Cowie chronicles the steady decline of enteric fever in this town. From 1892 to 1901 there was an average of 46 cases yearly, but from 1902 to the present time the average has been 19. In 1902, under the provisions of the Burton-upon-Trent Corporation Act, 1901, the conversion of privies and pan-closets into water-closets commenced, and during the interval 831 privies and 1492 pan-closets have been converted. It is to this process of substitution that Dr. Cowie very largely ascribes the decline in enteric fever prevalence, and he prophesies that "as the conversion of pail-closets and privy-middens to the water carriage system is gradually completed it is certain that enteric fever will become rarer in the borough and quickly disappear just like typhus fever."

REPORTS OF SCHOOL MEDICAL OFFICERS.

The East Suffolk Schools.—Dr. G. I. T. Stewart, the school medical officer for East Suffolk, has issued his second annual report, which is of a most elaborate and interesting character. The number of children inspected during the year was 8535. In 463 instances the footgear of the children was poor, and in 52 cases it was bad. The want of boots in the East Suffolk district appears to be

a very real distress, but it is alleviated often by private charity. It is too much to expect that agricultural labourers should be able to provide adequate footgear for more than five children of school age, and there is room for an organisation that will collect and distribute cast-off but wearable boots of every size and description. A good deal is said about the want of cleanliness of the children's heads, and teachers are urged to take a firm stand on this subject. 49 per cent. of the children suffered from defective teeth, and 11 are stated to have been practically starving from not having sufficient teeth for the proper mastication of their food. Defective vision was present in 4·6 per cent. of the children, external eye diseases in 2·5 per cent., and defective hearing in 3 per cent. Defective speech was found in 57 cases, and in reference to this Dr. Stewart notes that the accent in the county is a semi-guttural one, most pronounced in elder boys, who are particularly careless of the cleanliness of their mouths, with the result that the cheeks and lips being inflamed are not used for articulation. It is also stated that in many schools the want of modulation of the voice on the part of the teacher has seemed responsible for the sing-song monotone adopted by the children. It is to be regretted that teachers, to whom the voice is so important, should neglect the first principles of voice hygiene—the care of the mouth and the use of proper modulation of the voice.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet-Surgeon: H. B. Hall to the *Lancaster*, on recommissioning. Staff-Surgeon: J. Boyan to the *Bulwark*, additional, for disposal. Surgeons: G. D. Walsh to the *Pembroke*, for R.N. Barracks; A. F. Fleming to the *Lancaster*, on recommissioning; A. O. Hooper to the *Vivid;* H. Burns, R. J. G. Parnell, F. L. Smith, C. D. Bell, and A. G. V. French to the *Victory*, additional, for disposal; J. H. B. Martin, M. H. Langford, A. C. Rusack, and C. G. Sprague to the *Vivid*, additional, for disposal; T. C. Patterson, A. Fairley, F. C. Searle, and W. E. Lloyd to the *Pembroke*, additional, for disposal; and J. P. Berry to the *Wildfire*, additional, for disposal.

ROYAL ARMY MEDICAL CORPS.

Captain Richard J. C. Thompson is seconded for service with the Egyptian Army (dated April 29th, 1910).

Lieutenant Ralph De V. King resigns his commission (dated May 14th, 1910).

Surgeon-General J. G. McNeece has arrived home from Malta on relief by Colonel W. G. Macpherson, C.M.G., appointed Principal Medical Officer. Lieutenant-Colonel H. E. Cree, from Chatham, has been appointed to command the station hospital at Jhansi. Lieutenant-Colonel W. W. Pike, D.S.O., on arrival from India, has been posted to the Southern Command and appointed to the medical charge of the Military Hospital at Tidworth. Lieutenant-Colonel G. F. H. Marks, from Newcastle-on-Tyne, has been posted to Ferozopore. The transfer of Lieutenant-Colonel C. L. Josling to the Eastern Command has been cancelled consequent upon his retirement. Major F. Smith, D.S.O., sanitary officer, 2nd (Rawal Pindi) Division, has been selected for the increased rate of pay of his rank after 20 years' service in accordance with Article 317 of the Royal Warrant. Major A. W. Bewley, from Agra, has been appointed to command the station hospital at Landour. Major H. W. K. Read, from Landour, has been posted to Beverley. Major A. F. Tyrrell has been transferred from Queenstown to Fermoy. Major St. J. B. Killery, on completion of a tour of Indian service, has been posted to Jersey. Captain C. Scaife, Bombay, has been appointed a Specialist in the Prevention of Disease and placed in charge of the Brigade Laboratory at Colaba. Captain J. H. Douglass, from Secunderabad, has joined for duty at Dublin. Captain R. L. Popham has been transferred from Dublin to Cork. Captain T. E. Harty, from Mandalay, has been posted to the Eastern Command. Captain T. C. Lauder has arrived home on leave from the West Coast of Africa. Captain S. O. Hall, from Secunderabad, has been posted to Fermoy. Captain B. F. Wingate has been transferred from Ferozopore to Secunderabad. Captain S. G. Butler has joined at Pretoria. Captain H. C. R. Hime, late Adjutant Royal Army Medical Corps School of Instruction at Aldershot, has been posted to Bangalore. Lieutenant R. C. Priest, on completion of duty at Bury St. Edmunds, has rejoined at Colchester. Lieutenant O. W. McSheehy has been transferred from Devonport to Worcester. Lieutenant J. J. D. Roche has joined Dublin from the Curragh. Lieutenant J. R. Hill, from Chester, has been posted to Monmouth. Lieutenant J. R. Yourell has been transferred from Londonderry to Belfast.

INDIAN MEDICAL SERVICE.

The services of Major D. H. McD. Graves have been placed temporarily at the disposal of the Government of Madras. Privilege leave for three months has been granted to Major W. H. Kenrick, civil surgeon of Nimar, Central Provinces, undergoing a course of instruction at Amritsar. Captain C. A. Sprawson, civil surgeon of Jhansi, has been granted leave for 15 months with effect from April 14th. Captain H. W. Illius to officiate as civil surgeon during his absence. Captain J. M. A. Macmillan, officiating civil surgeon, Seoni, has been transferred in the same capacity to the Hoshangabad District. Captain J. D. Graham has been placed on special duty to inquire into the prevalence of malarial fevers in the United Provinces. Captain J. A. Cruickshank, medical officer in charge of the 26th Light Cavalry, has been granted eight months' leave. Captain W. H. Hamilton has been appointed to the substantive medical charge of the 36th Sikhs. The services of Captain L. P. Stephen have been placed permanently at the disposal of the Government of Bombay.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st Lowland Field Ambulance: Lieutenant Archibald Jubb resigns his commission (dated Feb. 22nd, 1910).

For attachment to Units other than Medical Units.—Ernest William Reed to be Lieutenant (dated March 19th, 1910); Frank Miller Bingham to be Lieutenant (dated March 24th, 1910); William Charles Frederick Harland to be Lieutenant (dated April 6th, 1910).

Attached to Units other than Medical Units.—Lieutenant Edward F. MacL. Neave to be Captain (dated July 14th, 1908); Lieutenant David R. Taylor to be Captain (dated Feb. 18th, 1910); Lieutenant Arthur H. Falkner resigns his commission (dated March 24th, 1910); Lieutenant John H. P. Paton resigns his commission (dated March 31st, 1910); Lieutenant Arthur Innes to be Captain (dated April 10th, 1910).

DEATHS IN THE SERVICES.

Major Kenneth Mackenzie Cameron, R.A.M.C., on May 7th, aged 41 years, at the Cambridge Hospital, Aldershot, from tetanus, the result of a bicycle accident. He entered the service as a surgeon-lieutenant in 1894, was promoted to captain in 1897, and reached the rank of major in 1905. He served with the Tirah Frontier Expedition and later went through the Boer war in South Africa and was at the siege of Ladysmith.

MISS FLORENCE NIGHTINGALE.

Miss Nightingale, who in spite of her age and invalid state is cheerful in disposition, has just quietly celebrated her ninetieth birthday. On May 12th she was the recipient of the following telegram from the King:—

> Miss Florence Nightingale, O.M., 10, South-street, Park-lane.
> On the occasion of your ninetieth birthday I offer you my heartfelt congratulation, and trust that you are in good health.
> GEORGE R. & I.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the May issue of this journal Lieutenant-Colonel R. J. S. Simpson, C.M.G., continues his interesting Medical History of the South African War, and Major A. P. Blenkinsop contributes a further instalment of his Notes on Military Map Reading. Medical officers, who for various reasons may have been unable to keep in touch with the subject of dark ground illumination, will find in the article by Captain L. W. Harrison on Dark Ground Illumination in the Diagnosis of Syphilis a practical descriptive summary of the necessary apparatus and methods of carrying out a convenient means of diagnosis, by which, in addition to that of the "Wassermann reaction," to quote the author, "the treatment and general management of syphilis will become a much more exact science than heretofore." In A Plea for the

Employment of Aurists in Connexion with Recruiting by Lieutenant-Colonel R. C. Cottell, the author refers to the large number of cases invalided from the army in consequence of deafness. He points out that short service after an expensive training owing to this cause is obviously a bad investment for the State, and believes that more care must be taken in testing the hearing of recruits, and that if necessary more aural specialists should be employed. "If the remedy," he says, "would even half this terrible loss, time and money would be well spent." Captain J. Dorgan gives an interesting personal experience of spinal analgesia by stovaine and describes his feelings in the course of an operation for radical cure of a right inguinal hernia.

THE RED CROSS SOCIETY.

At the annual general meeting of the council of the Scottish branch of the British Red Cross Society held on May 5th at the North British Railway station, Glasgow, it was stated that the returns received from the honorary secretaries of counties showed that there would appear to be in all but 277 members and associates of the society belonging to the Scottish branch, of whom 193 were members and 84 associates.

The President of the Suffolk branch of the Red Cross Society, the Hon. Mrs. Stirling, gave an address at a meeting of the executive committee which was held in the County Hall, Ipswich, on May 3rd. She laid particular stress upon the importance of field cooking classes, or what she might term housekeeping classes, remarking that even those ladies who were good cooks were neither accustomed to catering for dozens of invalids and their nurses, nor to cooking without the conveniences of a well-appointed house.

On May 3rd the Countess of Warwick presided at the Great Eastern Hotel, Liverpool-street, London, E.C., over a meeting convened for the purpose of forming an Essex branch of the British Red Cross Society. Mr. G. H. Makins, C.B., gave an address on the aims and objects of the movement.

A meeting of the Swansea branch of the Red Cross Society was held at the Guildhall, Swansea, on May 9th under the presidency of the Mayor, when a central committee was elected.

THE PARKES MEMORIAL PRIZE.

The subject for the next Parkes Memorial Prize will be as follows:—The Causation and Prevention of Enteric Fever in Military Service with special reference to one of the following branches of the subject: (1) the rôle played by flies in the dissemination of the disease; (2) the importance of carriers; and (3) the predisposing influence of age and length of service. This prize, consisting of 75 guineas and a bronze medal, is open for competition among the medical officers of the Royal Navy, Army, and Indian Services of executive rank on full pay, with the exception of the professors and assistant professors of the Royal Naval Hospital, Haslar, and the Royal Army Medical College, London, during their term of office.

Major O. J. Currie, late Natal Field Artillery, has been appointed to the command of B Company, Cape Medical Corps.

ROYAL EYE HOSPITAL, ST. GEORGE'S CIRCUS, SOUTHWARK, S.E.—Lectures, demonstrations on clinical cases, instruction in refraction work, and demonstrations on pathological specimens in the museum are given throughout the winter and summer sessions by the members of the staff of this hospital. Post-graduates and medical students wishing to become students at the hospital should communicate with the honorary secretary.

UNIVERSITY OF CAMBRIDGE.—The examinations for medical and surgical degrees during the Easter Term, 1910, will be held during June. The First and Second Examinations will commence on Monday, June 13th. The Third Examination (Part 1) will commence on June 15th and Part 2 on June 16th. The examination for the degree of M.C. will commence on June 18th. The names of candidates for the two latter examinations must be sent to the Registrary on or before Saturday, May 21st. Candidates who are members of the Senate may send their names to the Registrary direct. All other names must be sent through the prælectors of the respective colleges.

Correspondence.

"Audi alteram partem."

EPSOM COLLEGE.

To the Editor of THE LANCET.

SIR,—Your sympathetic article on Epsom College in last Saturday's issue, which I read with much pleasure, prompts me to write a few lines of kindly criticism and suggestion to the authorities of that great institution. I venture to think that the council might easily enlist the active sympathy of the medical profession in much greater degree than at present by giving those members of it who are, or might become, subscribers to the College opportunities of taking a personal interest in the institution.

My experience is probably not unusual, and I mention it, not in a spirit of cavil, but merely to indicate the lines on which a change might be made with advantage to the College. I have taken an interest in Epsom College for a long time; I have been a subscriber for many years; I have induced others to become subscribers; I have been the means of sending boys to the school, partly by advice, partly by helping to pay fees. With the exception of an annual visit from the collector and the reception of voting papers once a year, no indication of the existence of the College reaches me. No annual report, no notice of public functions at the College, has found its way to my address. It is true I have received invitations to banquets in aid of the institution and have been asked to subscribe to the funds then raised.

My experience of other institutions of a somewhat similar character has taught me that if we wish subscribers to take an active personal interest in any institution we must show that we take some interest in them, and it is in this particular that I think we often fail in our medical charities. I have been for some years professionally connected with a large educational institution supported by one of the chief trades of this country, and I have been much impressed by the personal interest shown by the subscribers generally, an interest warmly encouraged by the committee of management, all of whom are trained men of business.

I am, Sir, yours faithfully,

May 15th, 1910. WELL-WISHER.

TUBERCULOSIS AND HEALTH RESORTS.

To the Editor of THE LANCET.

SIR,—It has occurred to me that the majority of medical men who send their patients to recoup at a health resort are wholly unaware of the conditions of apartments, boarding houses, or hotels their patients reside in.

Not many days ago, a patient sent down here to me by her medical man complained that she had been to a health resort nearer London, and that it had come to her knowledge that the landlord of her lodgings there had chosen to live in that particular town because he was suffering from phthisis. To make matters worse, she assured me that the whole family, consisting of six persons (adults and children) lived during the time she was there in the kitchen, where everything appertaining to cooking, &c., had to be done. This so disgusted the lady in question that she removed here with despatch.

Now it is a matter of common knowledge that in every seaside and health resort in every part of the world consumptives take up their residence with the object of recovery or dragging on an existence, and making a living by letting lodgings. Under the present circumstances it is impossible for these invalids to be prevented from carrying out the business of lodging-house keeper, and I suggest that there should be some combination between medical men practising in these health resorts and those who are likely to send patients there.

In the meantime, let me further suggest that any medical man wishing to send a patient to convalesce at any health resort should, if he knows personally no medical man living at that particular place, turn up the Medical Directory and pick one doctor's name out and write to him. No doubt the medical man who receives such a request will be only too pleased to reply. As regards Torquay itself, it is, compared

to other seaside resorts, comparatively free from alien consumptives; the distance from London and the great centres prevents the poorer consumptive from undertaking the necessary expense. At any time I shall always be happy to recommend apartments, in Torquay and neighbourhood, which are without the taint of disease, and where the family live in a decent condition and at a moderate expenditure.

I am, Sir, yours faithfully,

Castle-road, Torquay. COURTENAY DUNN, B.A., L.S.A.

CHLORIDE OF CALCIUM.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Moncany's *résumé* of the therapeutic uses of calcium chloride, published in THE LANCET of May 14th, will you permit me to recall the quantitative estimation I made and published in the year 1900. I estimated the amount of calcium oxide in the normal urine of 24 hours and found that it contained 25 centigrammes of CaO. I also estimated the urine of 24 hours on the third day of taking 600 centigrammes of calcium chloride (daily), and found the amount of calcium oxide had risen from 25 centigrammes to 43 centigrammes in the 24 hours. It would appear that about 7·5 per cent. of the calcium oxide taken in the day was excreted by the kidneys. I am not aware of this investigation having been previously made or followed up, but it has a very great interest in relation to the *scientific* therapeutic use of this valuable salt. The paper containing the above experiments is published in the volume of the Transactions of the Academy of Medicine, Ireland, for the year 1900. I am, Sir, yours faithfully,

Terenure, May 16th, 1910. NINIAN M. FALKINER.

MEDICINE IN FICTION.

To the Editor of THE LANCET.

SIR,—Many both in the profession and outside it will be grateful for the timely words in your leading article under the above title:—"Sexual perversion is a pathological subject, and finds its only fit place in pathological treatises." The words are timely, for this perversion already finds place in current fictional literature. A protest from THE LANCET or from the official representatives of the profession a few years ago might have been prophylactic and saved "incalculable mischief." What can they do now to arrest that mischief? I venture to assert that a great and harmful fallacy underlies your words, "Suppose we pardon these great ones on the ground that their intellect was such as to demand unfettered scope"; but let that pass, we have now to deal with small men who exploit strange lusts for filthy lucre's sake. The facts are these. The French pornographic novel can be had for the asking at French libraries in London and at some of those leading English circulating libraries which took a part in the agitation for a censorship by libraries of English books. I am told that the same statement applies to German books. "Sapphism" has for many years formed a theme of French pornographic literature, but, so far as my knowledge goes, has only recently found its way into English fiction. Some months ago an English book which dealt with this theme in a veiled but dangerously suggestive fashion was suppressed through the efforts of a private individual after it had reached a sale of some thousands. This book was almost certainly inspired by a French novel written some ten years ago (it is mentioned in the English book) which deals nakedly with Sapphism, and which was circulated and sold by one of the aforesaid English libraries. The Act which regulates police interference with poisonous literature makes no distinction between English and foreign books. The Executive does at present make a distinction in favour of foreign books. Moreover, everything may depend on the definition of the word "obscene," and this difficulty will not be got over by the substitution of another word or words. The Home Office is in possession of the facts here briefly stated. It would greatly strengthen the hands of those who are trying to tackle this nauseous business quietly and wisely if the official representatives of the medical profession would assert that "all works of fiction which deal with sexual perversion in whatever language, and whether in veiled or open fashion, ought to be summarily suppressed without regard to the plea of deterrency." Perhaps you will allow me to deal on some future occasion with the failure of our system of dealing with moral filth and moral infection. Poisonous literature has been given an even bigger start than seditious literature has had in India.

I am, Sir, yours faithfully,

May 10th, 1910. M.B. (DUNELM).

THE GERMAN SURGICAL CONGRESS.

(FROM OUR BERLIN CORRESPONDENT.)

(*Concluded from p. 1303.*)

Goitre.

Professor KOCHER (Berne) said that goitre might disappear after the administration of iodine, but that nervous symptoms very like those of Graves's disease might develop. These symptoms, however, had nothing to do with the ordinary toxic action of iodine; they were caused by a retention of the iodine in the thyroid gland, where the agent causing the above symptoms was produced. The juice of the thyroid gland had an action similar to that of iodine, and the administration of preparations of that gland, whilst beneficial in myxœdema, might produce the symptoms of Graves's disease in normal persons. The tolerance for preparations of thyroid gland or iodine was different in different individuals, and some persons have a special susceptibility in this respect, as nervous symptoms might develop after the administration of very small quantities of these substances. The treatment must then be stopped at once and phosphates must be given as an antidote. The success of thyroidectomy in Graves's disease was based on the fact that a large stock of iodine was removed from the organism by the operation.

Professor SCHLOFFER (Innsbruck) spoke on paresis of the recurrent laryngeal nerve as a sequel to thyroidectomy. He said that he had seen the paresis develop in 13 out of 600 patients on whom that operation had been performed, and if laryngoscopy was practised immediately after the operation still more cases would be detected. Of his last 30 cases 3 showed this complication, which, however, disappeared in a few days. Even with the most cautious operators the recurrent laryngeal nerve did not always escape injury. Professor Schloffer had ligatured the different branches of the inferior thyroid artery on the capsule and had left the posterior wall of the capsule on the trachea, but nevertheless paresis occurred.

Dr. LEISCHNER (Vienna) confirmed Professor Schloffer's statement, saying that he had seen 63 cases of paresis of the recurrent laryngeal nerve in 300 operations; they were all of a transitory character.

Removal of the Thymus Gland.

Dr. KLOSE (Frankfort) said that he had, together with Dr. Vogt, made experiments on dogs to ascertain the function of the thymus gland. He removed the gland on the tenth day after the birth of puppies and found that during the first two or three months they did not differ much from other dogs. After that time, however, the animals became abnormally fat and somewhat apathetic; this stage lasted for about three months, when a cachectic stage began in which the animals became progressively weaker, and death occurred with symptoms of coma. During the cachectic stage the bones showed an increased brittleness, so that spontaneous fractures were frequent. On examination of the bones delayed ossification and osteoporosis with the formation of cysts were found, the cause being a deficiency of lime in the organism, a deficiency which the speaker considered to be due to the action of nucleinic acid. The administration of thymus juice did not remove the above symptoms. Thymectomy performed at a later stage after the involution of the gland had no effect on the animals. Dr. Klose and Dr. Vogt were of opinion that the spleen replaced the action of the thymus gland in the case of older dogs.

Dr. GEBELE (Munich) said that he had made post-mortem examinations in five cases of Graves's disease, four of which showed persistence of the thymus gland. He had made experiments on dogs by implanting a thymus gland into the abdomen and removing the thyroid gland, and he found that these animals survived, whereas others died from which the thyroid gland was removed without an implantation of a thymus gland. He therefore concluded that the thymus gland might replace the thyroid gland.

Treatment of Inoperable Cancer.

Professor VON CZERNY (Heidelberg) explained the methods of treating inoperable cases in the Heidelberg Cancer Hospital. They included the use of radium, X rays, fulguration, the thermo-cautery, the electro-cautery, and Schmidt's serum. The latter method was not altogether harmless, as pyrexia might develop; its action was not a specific one, but must be compared with that of erysipelas. Treatment by means of radium was comparatively successful in three cases of cancer of the pleura; fulguration proved useful in gangrenous cancerous ulcers, which in the result presented a cleaner aspect and showed some development of granulations.

Appendicitis.

Professor KÜMMELL (Hamburg) said that the statistics of the Berlin Medical Society on appendicitis were erroneous because they extended only over one year, whilst more than 50 per cent. of the cases had a relapse after that time. He concluded from his own experience in 1500 cases that the earlier the operation the lower the mortality, the latter being only 0·5 per cent. in early cases. He considered that the diagnostic methods at present available were inadequate; the increase of the viscosity of the blood and the multiplication of the leucocytes proved the presence of peritonitis, but not the imminence of perforation, and as the surgeon was unable to ascertain the condition of the appendix an operation should be performed as soon as the presence of appendicitis was certain or even likely. He did not agree with Professor Sonnenburg's advice that castor oil should be prescribed in certain cases, neither was he in favour of puncturing a supposed abscess, as suggested by the late Professor Lenhartz.

Professor SONNENBURG (Berlin) said that in post-mortem examinations of persons dying from other diseases traces of appendicitis were found in a great many cases without the occurrence of any previous clinical symptoms. An attempt should be made to ascertain in the individual case the virulence of the bacteria, as well as the resistance of the organism, and he had used for that purpose the leucocytometer and Arneth's blood test. The greater the number of uninuclear leucocytes the worse was the prognosis. He pointed out that he had recommended the administration of castor oil only in cases where the above test had been made and only in cases where the patients were in a hospital under constant surgical observation. He had treated 300 slight cases in this way without a single failure, and he protested against the opinion that this method meant a new therapy for every acute case of appendicitis. He wished to avoid unnecessary operations which were now performed in a good many cases, the surgeons being afraid of risking the patient's life by delay. The mortality in his hospital was not greater than elsewhere. When symptoms of appendicitis persisted after the first attack an operation during the quiescent interval was to be recommended.

Professor KOCHER said that the curve of the leucocyte count was during the first days the same in slight and in severe cases, a difference occurring only when perityphlitis or peritonitis had developed; the best time for an early operation might possibly be lost by waiting until there was an increase of the leucocytes.

Professor KÜTTNER (Breslau) pointed out that during the first year of his work in Breslau the mortality of appendicitis were 29 per cent. By an active advocacy of the idea of the early operation among the profession in Breslau the medical men were induced to send the cases to the clinic on the first day of the seizure, the result being a decrease of the mortality to 8·5 per cent.

Dr. FABRICIUS (Vienna) spoke on the relation between appendicitis and gynæcological ailments. He said that appendicitis often led to abortion, and that in child-bed it was often mistaken for a puerperal complication. It might also be erroneously diagnosed as extra-uterine pregnancies, puerperal fever, hysterical ovarialgia, or salpingitis.

Dr. VON BRUNN (Tübingen) recommended in operations for appendicitis the application of primary sutures, even if an abscess was present, because abdominal hernia was avoided in this way. Instead of 69 per cent. of cases of hernia he had now only 18·5 per cent. Phlegmon of the abdominal wall might eventually occur, but need not cause alarm.

Professor KÖRTE (Berlin) spoke against primary sutures of the abdominal wall in suppurative appendicitis, but recommended sutures of the peritoneum.

Cancer of the Appendix.

Dr. NEUGEBAUER (Ostrau) said that in about 1 per cent. of the cases operated on small growths were present on the apex of the appendix. They were contained within the lymph spaces of the muscular coat and were separated from the mucous membrane. They were believed to be cancer, but must rather be regarded as non-malignant endothelioma. True cancer of the appendix, although very rare, was just as malignant as other cancers.

Treatment of Peritonitis.

Dr. HIRSCHEL (Heidelberg) recommended in suppurative peritonitis the injection of camphorated oil into the peritoneal cavity. He had treated in this way nine apparently hopeless cases of peritonitis, with five recoveries and four deaths. The patients had all the symptoms of general peritonitis, such as dry tongue, tympany of the abdomen caused by paralysis of the intestines, fæcal vomiting, and a pulse-rate of 120 to 140. The abdomen was opened, the perforation in the intestine was closed, the purulent fluid was wiped out with gauze, and from 100 to 300 cubic centimetres of camphorated oil of 1 per cent. strength were injected into the abdominal cavity with as equal a distribution of it as possible. The action of the camphorated oil was based on its faculty of obstructing the lymphatic vessels of the peritoneum, so that the absorption of toxic substances was hindered; the bacteria were also enveloped by the oil and a reactive inflammation was produced.

Professor FRIEDRICH (Marburg) recommended the injection of glycerine into the peritoneal cavity for tuberculosis of the peritoneum. He said that in experiments on animals he had found that injections of from four to six cubic centimetres of glycerine produced an enormous exudation into the peritoneum. He used this passive hyperæmia for the treatment of tuberculosis of the peritoneum. He first performed laparotomy in order to ascertain the site and the extent of the tuberculosis, and then injected from 20 to 30 grammes of glycerine. The wound was now closed and the injection was repeated after some days through the peritoneum. Miliary tuberculosis and tuberculo-serous peritonitis without adhesions were treated in this way.

The Present Position of Lumbar Anæsthesia.

Professor KÖNIG (Altona) said that as the result of a collective investigation which he had made among the leading German surgeons he had found that about 50 per cent. of them no longer used that method. The report included 2400 cases; stovaine, tropacocaine, and novocaine were administered. Failures occurred rather frequently, and undesirable sequelæ were often observed, such as headache, vomiting, paresis of the abducent nerve, post-operative pyrexia, and three cases of purulent meningitis, notwithstanding most careful asepsis. Post-operative pneumonia was not less frequent after lumbar anæsthesia than after inhalation anæsthesia. The kidneys were never injured. The mortality was 1 in 200 cases. Professor König warned his hearers against a too frequent use of the method, which was permissible only in cases where there were contraindications against both local and general anæsthesia.

Transplantation of Joints.

Professor LEXER (Königsberg) showed a series of cases in which he had transplanted joints from one person to another. The first patient had suffered from synostosis of the knee-joint after suppurative gonitis, and to relieve this the diaphyses with the ligaments obtained from a recently amputated femur were implanted. Plastic operations on the extensor muscles were then performed. The patient had fairly good use of the limb, and the result proved that a transplanted knee-joint might remain serviceable for two and a half years. In another case a precisely similar operation was performed four months ago, the joint being already capable of flexion through an angle of 30°. The third patient was a man, the lower part of whose ulna had been resected for central sarcoma, and a piece of tibia had been implanted two years ago. The implanted bone became united, and a kind of articulation with the carpal bones was obtained with normal function of the joint. The fourth patient was a girl, the upper part of whose left tibia with the cartilage of the joint was resected and replaced at once by implanting a piece of a foreign tibia with the epiphysis.

The medullary cavity of the bone was filled by a fresh piece of fibula with periosteum. The patient was now able to walk on crutches and could even ascend stairs. This operation was performed eight months ago.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Appointment of District Medical Officers by Rotation.

AT a meeting of the Aberdeen parish council held on May 10th Dr. James Robertson was appointed a district medical officer in room of Dr. F. Kelly. Dr. Kelly's retirement took place according to a system of rotation adopted by the parish council of Aberdeen about two years ago, by which one of the five district medical officers retires every year. In reference to this rotation retirement the clerk read the following letter from the Local Government Board, dated April 26th last:—

Referring to your letter dated 14th inst., intimating that, according to the system of rotation adopted by the parish council of Aberdeen, Dr. Kelly will terminate his engagement with the parish council on 15th May next, I am to say that while the Board recognise that this is a matter in the discretion of the parish council, they do not consider that this system is one which should be encouraged, and they trust that the parish council will take a convenient opportunity of re-considering it.

Aberdeen School Board and the Treatment of Unclean Children.

At a conference, held on May 11th, between the public health committee of the Aberdeen town council and a subcommittee of the school board, a memorandum submitted by Dr. G. Rose, medical officer to the school board, was discussed, dealing with the treatment of such infectious diseases as itch, ringworm, impetigo, and vermin on the head and body, which, it was pointed out, were of common occurrence in the schools of the city and injurious not only to the children themselves but to the health of the community. The memorandum pointed out that in order to stamp out these diseases the coöperation and aid of the sanitary authority would be required. Vermin, it was stated, were to be found in the heads of children in all the schools. These cases could quite well be treated at home according to advice given by the medical officers. Children who were allowed to remain unclean after the parents had been warned should be handed over to the sanitary authority to be dealt with. Cases of impetigo should be kept from school for two weeks. Cases of ringworm should, if possible, be made to secure the application of X rays. Itch and verminous cases occurred in practically all the schools. Owing to the lack of a change of bed- and body-clothes it was practically impossible for those suffering from these diseases among the poor to get rid of them without outside help. Here the help of the sanitary authority was imperative, for although the duty of cleaning children was laid upon the board, according to the Public Health Acts of 1897 and 1907, the responsibility of dealing with the other affected members of the family and with their home and surroundings rested on the sanitary authority, and it alone could deal with those. It would be in the interest of the community, therefore, that it should undertake the cleaning and disinfecting of the children also. Multiplying of the sanitary staff and duplication of disinfecting appliances would be avoided, and the medical staff of the board could devote its attention to medical inspection without risk of entering the field or of overlapping the work of others. After discussion, it was agreed to secure information as to what was being done in the large centres before taking any steps.

May 16th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The National University of Ireland.

AT a meeting of the executive committee of the Gaelic League, held recently, a resolution was adopted expressing grave dissatisfaction with the action of the Senate of the National University in ignoring the demand that Irish be made an essential subject for matriculation.

Belfast Asylum.

At the monthly meeting of the Belfast Asylum committee, held on May 9th, a resolution was moved to consider the advisability of completing the whole scheme of new asylum buildings at Purdysburn, by the erection of such additional villas as will accommodate the patients remaining at Grosvenor-road Asylum, and such other buildings as are necessary. The motion, after having been seconded, had to be withdrawn, as so many members of the committee expressed the view that, as the corporation had already sanctioned the raising of from £80,000 to £85,000 for going on with the absolutely necessary part of the work, they really could not ask for more financial help at present. The feeling is growing in Belfast that the asylum is really costing an immense sum of money, and that many other equally pressing municipal health projects are being kept back owing to the enormous sums that are being spent in putting up costly buildings at Purdysburn.

Benn Ulster Eye, Ear, and Throat Hospital.

At the annual meeting of the supporters of this charity, held on April 26th, it was reported that in the extern department 2607 new patients were treated during the past year. There were 39 operations for senile cataract. Since the hospital was founded—about 40 years ago—over 1600 persons have had cataracts removed from their eyes, with restoration of useful vision in well over 90 per cent. of the cases. 256 operations were done during 1909, mostly under general anæsthesia, besides a large number of minor ones under local anæsthesia.

May 17th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

International Conference for the Study of Cancer.

THE Second International Conference for the Study of Cancer will be held at the Faculty of Medicine in Paris from Oct. 1st to 5th. The subscription will be 25 francs, and only members of societies or committees affiliated to the International Society will have an opportunity of taking part in the proceedings. Intimations of intention to be present will be received by the national committee in each country, and will be sent for all countries indiscriminately to the treasurer of the French association. With respect to the official languages, the Conference will follow the principles adopted by the international congresses. The principal business will be the reading of a series of reports devoted exclusively to progress made in recent years, especially since 1906, and to an account of the present state of the various questions under review. These reports will be printed and sent to all the members before the Conference meets. The manuscripts must not make more than 15 octavo printed pages and must be sent before August 15th either to Professor G. Meyer, general secretary of the International Association, 13, Bendlerstrasse, Berlin, or to Professor Pierre Delbet, general secretary of the French Association, 24, Rue du Bac, Paris; those arriving after this date will not be able to appear among the publications of the Conference. The time allowance will be 15 minutes for the reading of each report and five minutes for criticism or remarks during the discussion of the reports, but the President may allow a prolongation of five minutes. Members of the Conference who wish to take part in the discussion of the reports must give notice of their intention to the secretaries of their respective national committees.

The Zambaco Pasha Prizes.

Dr. Zambaco Pasha has recently founded three prizes, one of 1000 francs and two of 500 francs, in connexion with the Society of Tropical Medicine and Hygiene. They will be awarded to the three best memoirs on the contagiousness of leprosy, containing personal investigations and minute and careful scientific observations made on the spot. The committee for awarding the Zambaco Pasha prizes has decided that the candidates shall deal with the following questions: 1. Is leprosy hereditary? 2. Is leprosy contagious from one person to another? 3. Is leprosy communicable to the lower animals? The memoirs shall be accompanied when necessary by illustrative specimens, such as microscopical preparations and photographs. They must be in the French language and must be sent to the general secretary of the Society of Tropical Medicine and Hygiene, 18 Rue de Grenelle, Paris, before April 1st, 1912.

Lunacy Commissioners at the Ministry of the Interior.

A decree of Feb. 2nd, 1910, has established at the Ministry of the Interior a special commission which will advise on all questions concerning the engagement, promotion, discipline, and remuneration of the officials of the public lunatic asylums, as well as on all subjects which may be referred to it either by the Minister or by the director of the Assistance Publique or by the department of public health. The commission consists of seven members, of whom three are medical directors or principal medical officers, elected annually by their colleagues, who have, moreover, to elect a deputy. In questions of discipline affecting assistant medical officers the three medical directors or principal medical officers will be replaced by an equal number of assistant medical officers.

Société Nationale du Chien Sanitaire.

In France, as in other countries, there exists a Société Nationale du Chien Sanitaire for training dogs to find the dead and wounded on the battlefield. The French society held its general meeting in Paris on April 30th at the Mairie of the Eighth Arrondissement. The President said that the membership had almost doubled since last year, during which the society also took part in the dog show in Paris. During 1910 the society will be represented at various shows and exhibitions, as well as at courses of instruction in connexion with the *service de santé* in Paris and at rehearsals of finding wounded soldiers both by night and day. At the request of the Association of French Ladies, a demonstration will be given before long at Auteuil. M. Laval has been appointed to collect information with respect to this class of trained dogs in various countries, and at the next general meeting M. Grandjux will open a discussion on the question, Who ought to provide the necessary supply of these dogs for the army in time of mobilisation?

Traumatic Osteoma.

At a meeting of the Paris Society of Medicine held on May 13th, M. Dabout showed a patient upon whom he had operated for a traumatic intramuscular osteoma in the right vastus externus. At the same time he showed the tumour and radiographs bearing on the case, the disease being consecutive to the kick of a horse. M. Dabout laid great stress upon the length of time the tumour had taken to develop, for a radiograph taken some six weeks after the accident was quite negative. M. Caudray said that the periosteal origin of osteomas had given way to the theory that they were due to a myopathy, except in the case of osteomata growing near the articulations or where they were obviously due to some periosteal condition.

May 17th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Infantile Tuberculosis in Vienna.

Dr. Pollak, speaking before the Medical Society of Vienna, gave the results of investigations which he had made into the clinical and pathological details of tuberculosis amongst infants. He has seen 92 cases of undoubted disease within one year, of which 86 gave a positive tuberculin reaction and 6 were seen at the necropsy. 30 cases were diagnosed in the first year of life, 62 in the second year. The youngest infant was 39 days old when the diagnosis was made. The prevalent symptoms were those of tuberculosis of the bronchial glands, such as cough and expiratory râles; in 22 cases cutaneous tuberculides were present. In 17 cases tuberculous meningitis was observed, and Dr. Pollak believed that it was mostly a fresh infection on account of the absence of affections of the bronchial glands and the existence of good general health at the onset. In three cases there was nothing to indicate tuberculosis, except the fact that in spite of breast-feeding the infants became pale and lost flesh. The tuberculin reaction explained matters at once; wherefore it was very important, according to Dr. Pollak, to apply this test in similar cases. Until quite recently the prognosis of infantile tuberculosis was thought to be very bad, but it had now been found that this was not so. Of the 92 children kept under observation 42 were still alive (in the first, second, and third year of their age), whilst the rest had died. The mortality of the infants who were found diseased in their first half-year was 87 per cent., while for those who were attacked in the second half-year it was 58 per cent. The age at infection was therefore very important. The severity of the disease was proportionate to the severity of the disease in the person who infected the infant, and the prognosis was the better the more carefully the child was nursed. Breast-feeding was not absolutely essential, 30 per cent. of the survivors having been fed by hand from bottles. The surviving infants showed a complex of symptoms which was characteristic—the so-called tuberculous habitus, which developed many months after infection, as the infected infant might appear healthy for a considerable period. Dr. Pollak had examined all children who had come in contact with one of his tuberculous patients, and who had therefore lived in tuberculous surroundings. Of 200 children living under these conditions, only nine did not react to tuberculin in a dose of 1 milligramme injected subcutaneously, a circumstance which was to be explained either by an absence of infective agency or by a minimal degree of infection. The investigations conducted in a very searching way had brought to light the fact that all children who had become infected were under four years old, whilst those above four years of age nearly always escaped. Of 243 children, all those became infected in whose case either one parent or both parents were infected at the time when the children were born, but if the infection carrier did not become ill till after being married several years the older children remained free. Dr. Pollak believed that older children acquired a sort of immunity against tuberculosis ("Tuberculose-Festigkeit"), and he said that the "habitus phthisicus" indicated that the child had been infected in his first years of life, whilst tuberculous manifestations in older children were survivals of an infection contracted in very early life. Of course, these conclusions require a much larger series of observations before being accepted as convincing.

The Comparative Chemistry of Brain Substance.

Dr. Linnert, at a recent meeting of the Gesellschaft der Aerzte, read a paper in which he gave some interesting details on the chemistry of the brain. He said that the lipoids formed the main bulk of the brain. Analysis showed that they consisted of the elementary substances oxygen, hydrogen, nitrogen, carbon, and phosphorus, with some sulphur. The brain of the higher animals was fairly constant in its composition; the quantity of the brain increased with the bulk of the body, the dry substance and the lipoids being mainly responsible for this increase in weight; the human brain contained more lipoids than any other brain. The cortex contained more water than the white substance; the dry substance of the cortex had 45 per cent. of lipoids, the white substance 75 per cent.; the latter had also less phosphatides, whilst the pons and the medulla had the largest proportion of water in the whole brain. The cerebellum contained much water, but only a small proportion of lipoids and phosphatides. The spinal cord was poorer in water than the brain; its dry substance might contain as much as 80 per cent. of lipoids, whilst the entire brain had 60 per cent. of its weight in lipoids.

Taxation of Medical Practitioners.

A report recently issued by the Revenue Office gives some interesting particulars relative to the rates and taxes payable by Austrian medical practitioners, and the following figures are worth recording. The doctor in this country has to pay first the so-called occupation-tax (*Erwerbsteuer*), which is assessed according to the locality, the extent of the district, and the quality of practice under consideration. The minimum tax is levied on beginners and amounts to about 8*s.* a year, but it soon increases, and the average amount is about ten times that sum, whilst of course in cities the figures go up to £40 or £50 a year, especially with specialists of repute. The amount paid under this heading by medical men in Vienna is about £16,000. In the next place, a practitioner has to pay income-tax. He has to show how much of his income is derived from his medical practice and how much from other sources. The proceeds of practice are taxed so that annual incomes up to £125 pay 1 per cent. and those from £125 to £250 pay 1½ per cent., whilst for every additional £80 of income an additional ¼ per cent. (approximately) has to be paid. The maximum is reached with a tax of 5 per cent. on a practice of £2000. The amount thus paid by medical men in Vienna reaches

£26,000. It can hardly be said that these figures allow any positive conclusions to be drawn as to the actual amount of the income of the medical profession in this city, but it may nevertheless be remarked that the income-tax is equivalent to about £800,000 earned by the medical men. The average amount paid by a practitioner in this city in the shape of rates and taxes is from 3 to 4 per cent. of his earnings. Incomes derived from appointments, as well as those of officers of public health, are taxed only on the sliding scale of the income-tax, no occupation-tax being payable on account of them.

Introductory Lecture by Professor Wertheim.

Professor Wertheim, the newly-appointed director of the Second Gynæcological and Obstetrical Clinic, opened the summer session of his clinical course by a short introductory lecture, which was attended by many professors, by the whole Senate of the Medical Faculty, and by numerous students. After a sympathetic allusion to the career of Professor von Rosthorn, his predecessor, Professor Wertheim explained his attitude to the problems of modern gynæcology and obstetrics. He considered that caution and patience were qualities indispensable to an obstetrician, emphasised the overwhelming importance of asepsis in obstetrics, especially when midwives were in attendance on the patient, and spoke of the necessity of expertness in performing operations and making a diagnosis. As regards gynæcology, he said that for any success to be obtained in cases of cancer radical and surgical treatment must be commenced as early as possible. He also cited some examples of the mutual relations existing between general medicine and his specialty, and advised the students to pay close attention to these relations.

May 14th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENT.)

A Commission on Public Safety.

A PLAN has been put forward in Minnesota for the formation of a State Commission on Public Safety. It is suggested that this body, which it is proposed should sit all the year through, should take over all the functions now exercised by the Board of Health, the administration of the pure-food laws, the work of the Bureau of Labour, and of all other departments of the public service whose object is to safeguard life, limb, and health. The originator of the plan is Dr. Henry M. Bracken, secretary of the Minnesota State Board of Health.

Cancer Research.

Cancer research in the United States will be benefited by the munificence of Mr. George D. Barnard of St. Louis, who has provided the funds for a new four-storey hospital building, to be shortly opened for the St. Louis Skin and Cancer Hospital, which was founded by the same generous donor in 1906. The entire fourth floor of the new buildings will be reserved for a research laboratory, which is to be fully equipped for cancer research, and the sum of $8000 has been set aside for that purpose. Professor Leo Loeb, of the University of Pennsylvania, has been selected as director of the new laboratory. Since the foundation of the St. Louis Skin and Cancer Hospital four years ago much good work has been done in the institution, which, unlike most hospitals in this country, is a purely charitable institution, having neither pay wards nor pay beds. Efforts are being made to raise a much larger endowment fund to ensure the permanence of this work.

A Life Insurance Company Aids the Attending Physician.

A novel departure has been made by the Metropolitan Life Insurance Company of Philadelphia. This company has entered into an arrangement with the District Visiting Nurse Society of the city to supply nurses—for night service where necessary as well as for day—to visit its sick policy-holders, irrespective of the amount of their insurance or of any other considerations, in coöperation with the attending physicians. By seeing that his orders are carried out, and by obviating those difficulties that so frequently arise from ignorance or negligence, the company believes that its own interests, as well as those of the policy-holding patient, will be preserved. The move is admittedly a pure business proposition.

The Sanitary Condition of the Isthmus of Panama.

Probably no document ever issued showed so conclusively the beneficial results of intelligent sanitary administration as the recently published report of the Department of Sanitation of the Isthmian Canal Commission for 1909. In 1906 the general death-rate was 41·73, in 1907 28·74, in 1908 13·01, and in 1909 10·64, in spite of the fact that there were 47,167 employees in 1909, as against 26,547 in 1906. The typhoid death-rate for the year was only 0·27 per 1000. The deaths from malaria—that erstwhile scourge of the country—were only 52. Not a single case of yellow fever, small-pox, or bubonic plague occurred. When the frightful conditions in regard to disease that formerly made the region a veritable death-trap and caused the failure of the French canal project are recalled, the result is surely a most convincing testimony to the value of scientific sanitation.

Death of Dr. F. Byron Robinson.

Dr. F. Byron Robinson of Chicago, who died recently at the age of 53 years, was a most tireless worker as an anatomist, investigator, and teacher, and a prolific writer on many subjects. He was also an accomplished surgeon in the field of intestinal and gynæcological surgery. He had held many teaching posts, and was held in the highest regard by all his old pupils, who were very numerous, as well as by a wide circle of professional friends.

May 9th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Reorganisation of the St. John Ambulance Association in India.

A MEMORANDUM has recently been issued by the executive committee of the Indian branch of the St. John Ambulance Association regarding the extension of the sphere of usefulness of the branch. The Viceroy as president takes a deep personal interest in the matter, and the idea is that "the time has come when the active support of the heads of local governments, of the rulers of Indian States, and of the leaders of non-official organisations, industrial and commercial, is essential to secure the desired expansion and to place the working of the association on a sound and permanent footing." The committee has accordingly invited the various authorities and associations indicated above to coöperate in the matter and to take the initiative in provinces, states, and large towns with a view to carrying out the new scheme. Individuals in India are liable to sudden transfers, and to place the organisation of the association on a sound basis it has been deemed desirable that the local authorities and heads of the community should become *ex-officio* the local leaders of the association, instead of leaving it entirely to the individual efforts of private persons whose transfer may cause centres practically to cease to exist. In England and the Colonies a fee similar to that levied by other educational bodies is charged by the association for holding examinations under its auspices. As a special concession to the peculiar needs of India this fee need not necessarily be charged, and a charge of six annas (sixpence) for each certificate to cover the cost of printing, examiner's report form, registration, &c., is the only charge made in addition to the cost of books and appliances. The cost involved is, therefore, not very great, as 250 persons can be certificated for about Rs.100 (£6 13*s.* 4*d.*). The certificates are in the form approved by His Royal Highness the President of the association. They are sent out in bulk from London and are issued from the stores depôt, Bombay, on receipt of an attendance register and examiner's report on the prescribed forms. Information with reference to the formation of classes is laid down in pp. 16–19 of the pamphlet "The St. John Ambulance Association in India." Lecturers should as a rule be commissioned medical officers or fully qualified medical men or women, but where circumstances render it desirable military or civil assistant surgeons, hospital assistants, or certified practitioners may be appointed. Any person qualified to lecture may also examine classes, but examiners should as a rule be detailed by district secretaries and no lecturer can in any circumstances examine his own class. One of the main objects of the branch is to place the

local organisations of the association on a really sound footing and ensure their steady growth. With this view it is hoped in the future to appoint a whole-time secretary who will visit local bodies at regular intervals and devote his whole energies to furthering the association's efforts. The following shields and cups have been presented for competition amongst ambulance workers in India—viz., (1) Indian Volunteers' Challenge Shield presented by His Royal Highness the Prince of Wales; (2) Indian Railways Challenge Shield presented by His Royal Highness the Grand Prior and the Chapter of the Order of St. John; (3) the St. John Ambulance Brigade Challenge Cup; (4) the Bombay Police Challenge Cup; (5) the Oudh and Rohdkhand Railway Inter-Station Challenge Shield; and (6) the North-West Frontier Police Challenge Cup. Full particulars of the conditions under which these cups are held are issued annually to all concerned and may be obtained at any time from the honorary secretary, Indian Branch. The association is one which should command the full support of the Europeans and Indian communities, and there should be a satisfactory response to the memorandum issued by Colonel W. R. Crooke-Lawless, C.I.E., secretary of the executive committee of the Indian branch.

April 16th.

NOTES FROM CHINA.

(FROM OUR OWN CORRESPONDENT.)

The Helminths of China.

I HAVE previously referred to this subject, but the issue of a new report by the Research Committee of the China Medical Missionary Association in its journal warrants a further notice, if only from the importance given to it by the extraordinary number of persons affected by helminthiasis in China. To such an extent is this the case that a preliminary dose of calomel and santonin is almost a routine practice in the hospital treatment of all cases. At the same time, notwithstanding the high percentage of infections, it must be admitted, taken all round, that the part played by worms in the causation of intestinal disease is a comparatively minor one. As far as China is concerned, the suggestion of M. Metchnikoff that intestinal worms are extensively involved in the etiology of appendicitis may be regarded as incorrect, for this disease is one of the rarest surgical affections throughout the Empire. It has been said that worms are carriers of bacterial and coccic infection, externally by being covered with microbes, and internally by their intestinal microbic flora. This, however, is a danger which counts for little here, for while it is literally true that over 65 per cent. of the population of China harbour worms of one kind or another, there are not many who show signs clinically of the parasites they support. Although such parasites cause lesions of the intestinal mucosa, the damage done is probably not more than can be dealt with by local phagocytosis. Certain it is that healthy coolies are brought into hospital for street accidents, &c., who are daily passing millions of ascaris ova without being aware of anything wrong intestinally. (The mention of these men tempts me to add a note of the very expressive Chinese term used to describe their calling. They are called "*Mai li ch'i-ti jen*"—i.e., sellers of strength.) Having regard to the high prevalence of worms throughout China, it was felt by the Medical Missionary Association that a combined effort should be made to arrive at a more definite knowledge of the subject, and to further observe the geographical distribution and form a more reliable basis for future additions and corrections. The following data are from the last report and they are the outcome of widespread observation, the reports being drawn from all over China from tropical to subarctic zones. They were presented under the headings of each province, but to save space I have summarised them. 1. *Ascaris lumbricoides:* 75 per cent. of infections; no clinical manifestations except occasionally in children. Sometimes, though rarely, it is migratory—e.g., a case of multiple sinuses of the thigh in which an ascaris appeared in one of the openings, and in another case in a sinus under the twelfth rib. Among young Chinese ascaris is practically universal, but infection often apparently dies out of itself. It is equally common all over China, Manchuria, Korea and Siam. 2 *Ankylostomum duodenale:* About 40 per cent. of infections; very often no clinical indication. In one careful report less than a third of those infected showed anæmia and a hæmoglobin percentage of 65 or less; often no degree of anæmia was demonstrable. Sometimes there is mixed infection of A. duodenale and Necator americanus. The parasite is overwhelmingly preponderant among the farming class as compared with town dwellers. In the former there are often cases of ground itch, but vast numbers suffer who show no signs of skin lesions. This parasite is almost absent in North China. 3. *Strongyloides intestinalis* (syn., *Anguillula stercoralis*): Scarcely 1 per cent. of infections; in Mid and South China. In one case, a double infection, it was found along with large numbers of ankylostomum ova, where the strongyloid embryos in a fresh stool were seen swimming about among unsegmented ankylostomum ova. 4. *Trichocephalus dispar:* Common, about 18 per cent. of infections from Shanghai southward; no discomfort in human host. 5. *Oxyuris vermicularis:* 0·5 per cent. of infections. Though common in other countries it is noted as rare in China, with the exception of the province of Shantung, where it is reported as extremely common. 6. *Schistosomum japonicum:* 7 per cent. of infections. A point of much practical interest noted by Dr. Houghton of Wuhu, is that "in a number of the cases no history was obtained which would point to the harbouring of such a parasite, and physical examination was negative; other cases gave a history of obscure gastric trouble, and physical examination gave no clue to the real situation." From all accounts it would appear that the distribution of this worm is almost entirely limited to the Yangtze Valley. The clinical picture associated with the parasite is usually that of dysentery with accompanying anæmia, ascites, and enlarged liver and spleen. 7. *Clonorchis* (*Opisthorchis*) *sinensis:* Occurs in from 4 to 7 per cent. of infections in Hong-Kong and South China, to which its distribution seems limited, as there is only one case reported from Hankow, which was probably imported; otherwise it is not seen in the human host in the Yangtze Valley, though it has been noted as not uncommon in cats. It is also present in Siam and Korea. 8. *Fasciolopsis buskii* (*Distomum crassum*), a fluke of much pathological importance: Is endemic in Ningpo, Swatow, Canton, and Hong-Kong. In Shanghai it occurs in 0·4 per cent. of infections. It has never been observed in North China. Fasciolopsis goddardi is reported as having been met with in the Yangtze Valley. 9. *Paragominus* (*Distomum*) *westermani:* Has been found in Hong-Kong, but probably only from infected cases. 10. *Tænia:* Cestode infection in man is admittedly unusual in China. It has been definitely stated by several practised observers to be absent in South China and only very rarely is noted in other parts of the Empire. An interesting point occurs in a report from Tsingtau, the German settlement on the north-east coast, and as it shows in a striking way the affinity of certain worms for European or Chinese human hosts habituated to different modes of life and diet, I give the figures which were collected by Dr. Uthemann, head of the German Government Medical Staff:—

	Europeans.	Chinese.
Eingeweide würmer	119	—
Ascaris lumbricoides	126	366
Oxyuris vermicularis	1	1
Tænia (allgemein)	209	—
,, saginata	28	—
,, solium	13	—
,, echinococcus	1	2
Amœba coli	39	—
Lamblia intestinalis	1	—

Cestode larvæ have been observed by Dr. Houghton in fish in abundance and bothriocephalus latus is frequent in cats, but he could not find traces in a human host. It is difficult to account for the freedom of Chinese from cestodes; probably there is much in attributing it to the fact that the Chinese eat their beef and pork thoroughly cooked and chopped in small pieces. The meat is never served cooked in joints. I have seen a case of bilharzia hæmatobium in a British soldier in Peking. He had previously suffered from it in South Africa. But no instances have been met with in which Chinese suffered from this Ethiopic fluke. These notes are the outcome of widespread observation from provinces differing greatly in climate, elevation, density of population, and amount of rainfall. But, in the absence of sewerage systems, the unclean habits of

the people, and the spreading of night soil over vegetables, these provinces have all the same sources of infection.

Munificent Gifts.

News has been received in Shanghai that the well-known firm of Krupp has made the handsome donation of half a million marks, or £25,000, to the German Medical School at Shanghai. In this school the teaching is in German, and in addition to their regular medical course they give the necessary preliminary training.—Mr. H. S. Wellcome has contributed £1000 to found a perpetual publishing fund for the translation of leading medical works into Chinese, under the control of the China Medical Missionary Association.

April 20th.

Obituary.

HERBERT NELSON CAPPE, M.R.C.S. ENG., L.R.C.P. LOND.

THE Surrey county council has lost a reliable officer, and all who knew him a sincere friend, in the untimely death of Herbert Nelson Cappe on April 22nd, aged 44 years. He was the only son of Mr. Walter Cappe, who was appointed clerk and steward of Brookwood Asylum when it was completed in 1867.

Educated for the medical profession at University College Hospital, he qualified in 1888, and immediately acted as locum tenent at the asylum for three months. For a short time thereafter he went into private practice, but returned to Brookwood as junior medical officer 16 years ago, being appointed to the senior position on Dr. F. C. Gayton leaving to take charge of the new asylum at Netherne late in 1908. The circumstances of his death were peculiarly sad, as within a short time he had every reason to believe that he would have realised his ambition and have been appointed medical superintendent at the place where the greater part of his life had been spent, but while conducting a post-mortem examination he became infected, and after a gallant struggle for a month, and in spite of everything that could be done for him, he passed away. The cause of death was septicæmia. Always painstaking and conscientious in the performance of his duties, an able physician and an agreeable colleague, his loss will long be felt by both the staff and patients of the asylum.

A good all-round sportsman, Mr. Cappe was well known outside the precincts of Brookwood as a cricketer. For the Brookwood Asylum team, whose cricket ground is one of the finest and best kept in the county, he made many long scores.

CESARE ZONCHELLO.

THE "Martyrology of Medicine" has just been enriched by another chapter, in the untimely death of this able, accomplished, and intrepid bacteriologist, who "died at his post" at Jeddah on the Red Sea on April 17th.

Born 33 years ago at Sedilo, in the Island of Sardinia, the son of an esteemed medical practitioner still actively engaged in professional work, Cesare Zonchello was one of seven brothers, two of them distinguished at the Bar, a third in the navy, a fourth in commerce, and the remaining two still under their father's eye. A student in arts and medicine at the University of Cagliari, Cesare Zonchello graduated with honours in the latter faculty, and was, for three years thereafter, absorbed in rural practice. Valuable as was the experience thus acquired, he longed to supplement it in other fields, and, after a survey of the several departments of medicine, found himself especially drawn to bacteriology in its practical applications. For the next two years accordingly he studied under Professor Angelo Celli at Rome in the "Istituto Nazionale d'Igiene," and speedily took rank as one of the most proficient *alumni* of that master. In 1906 the Ottoman Government, with a view to strengthening its sanitary administration, threw open to competition an important post in that service. Cesare Zonchello became one of the "concorrenti" and came out at the head of the list, with an immediate destination to the lazzaretto of Camaran in the Yemen.[1] That island is about the least attractive of its treeless, sandy congeners, dotted with some six or seven villages, and possessing a harbour periodically visited by the steamers which convey hordes of pilgrims to Mecca. The said "hordes" arrive from beyond the Straits of Bab-el-Mandeb, from the Persian Gulf, from India, from Java, from the Mahommedan Orient in general, and are compelled by law to undergo seven days' sanitary surveillance at Camaran. All passengers suffering, or suspected of suffering, from plague, cholera, small-pox, or other maladies, infective or contagious, are detained and put under treatment till cured. Those who are in certified good health continue their voyage to Jeddah, whence they proceed on foot to Mecca. For six months the island is alive with these pilgrims, as they come, stay their appointed time, and start again; and for another six months it relapses into the silence and the squalor which form its external features. Dr. Zonchello had taken part in three of these "campaigns," as the recurring periods of six months are called, having two compatriots among the 11 colleagues deputed by the other European Powers, Dr. Delpino, director of the staff, and Dr. Businelli of Milan, since dead. Distinguished among them for his ardour in bacterial research, he had utilised his opportunities in an elaborate series of dissections of rodents and in the cultures made from them, till on April 17th he succumbed to that misadventure, all too common in his *métier*, blood poisoning contracted from a puncture.

A compatriot describes him as a fine robust specimen of the Sardinian islander, full of *bonhomie* and fervour, moral and intellectual, passionately fond of work, and relieving it, at intervals, in letters to his family and friends, whom he kept *au courant* with his studies and findings. Writing from Cagliari on May 10th, 1909, he says: "I am here for two months preparing for a spell of cholera research at Jeddah and collecting all the requisite equipment. The next 'campaign' of 18 months will find me there employed on a steady, accurate investigation of the plague. When I read in the newspapers of the tumults and revolutionary surprises in Turkey, I seem to think we shall be living in the neighbourhood of a powder magazine which from one hour to another may blow us skyhigh." Nominated sanitary director of the lazzaretto of Abou-Saad, near Jeddah, where the pilgrims on their return from Mecca are once more subjected to examination, he found the work still more arduous, the infected cases still more numerous, owing to the fatigues of the double voyage, its excitement and privations. Abou-Saad, moreover, was not nearly so well provided with laboratory and clinical resources as Camaran, and the risks encountered by the medical staff were at once greater and less easy to combat. Notwithstanding these adverse conditions, he struggled bravely and cheerily at his post, but with all too visible deterioration of health and resisting power, until at Jeddah, as already stated, he fell a victim to duty, literally dying at his post.

[1] THE LANCET, vol. i., 1907, pp. 1251, &c.

HENRY JAMES SMYTH, L.R.C.P. LOND., M.R.C.S. ENG.

Mr. H. J. Smyth died at his residence, South Molton, Devon, on April 27th, from pneumonia, following influenza, after a short illness. The deceased, who was 49 years of age, received his medical education at St. Thomas's Hospital, and qualified L.R.C.P. Lond. and M.R.C.S. Eng. in 1886. After holding resident appointments at St. Thomas's Hospital Mr. Smyth commenced practice at South Molton. Among other appointments he held those of medical officer and public vaccinator for the Fourth and Eleventh Districts of the South Molton Union, surgeon to the Great Western Railway employees, and medical officer to the Post Office. Mr. Smyth was highly esteemed in South Molton, where he had resided for 20 years; he took great interest in local matters, and he will be greatly missed there. He leaves five sisters for whom much sympathy is felt. The funeral, which took place on May 1st, was largely attended. At the service the vicar made feeling allusion to the deceased and the great loss which the town had sustained by his death.

EDWARD CRESSWELL BABER, M.B. LOND., M.R.C.S. ENG., L.R.C.P. LOND.

THE death of Dr. Edward Cresswell Baber occurred at his London residence in Brook-street, Grosvenor-square, on May 14th. Well known in London, he was perhaps better known in Brighton and Hove, where he had a house, and the news of his death at the comparatively early age of 59 years

came as a great blow to very many. The medical charities of these latter towns have lost a great friend, particularly the Brighton and Sussex Throat and Ear Hospital, of which he was senior surgeon. The son of the late Dr. John Baber of South Kensington, he was educated at King's College School, London, and commenced his medical career at St. George's Hospital, where he was a prize-winner and William Brown scholar. He subsequently became house surgeon and demonstrator of anatomy. He continued his medical studies in Paris and Vienna. In the course of his career, Dr. Baber had been President of the Laryngological Society of London, Vice-President of the Otological Society, honorary secretary of the International Otological Congress in 1899 and President in 1909, President of the Section of Laryngology and Otology, British Medical Association, 1899, and President of the Brighton and Sussex Medico-Chirurgical Society. He had also been resident medical officer at the Atkinson-Morley Convalescent Hospital and surgeon at the Royal Ear Hospital, London. In spite of the many calls upon his time, Dr. Baber was a frequent contributor to medical journals on the subject of diseases of the ear, nose, and throat, and contributed to THE LANCET an important "Report of 100 Cases of Ear Disease." He was also the author of a valuable guide to the examination of the nose, and of two contributions to the Philosophical Transactions of the Royal Society of London on the anatomy of the thyroid gland. The funeral took place at Hove Cemetery on May 18th, the interment being preceded by a service at St. Anselm's Church, Davies-street, London.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Buschbeck, president of the Dresden Medical Society.—Dr. Heinrich Kempner, one of the oldest members of the medical profession in Germany, being in his ninety-first year. He had been living in retirement at Breslau for the last 20 years.—Dr. Oscar C. De Wolf, formerly professor of hygiene in the Northwestern University Medical School, Chicago.—Professor Hermann Lenhartz, director of the Eppendorf Hospital, near Hamburg, and one of the most eminent physicians in Germany. He studied in Leipsic and was for several years assistant to Professor Ernst Leberect Wagner there and became extraordinary professor. In 1895 he was appointed director of St. George's Hospital, Hamburg, and some years later director of the great Eppendorf Hospital. He was recognised as an authority in everything connected with hospital management, and was president of several committees, such as those for cancer research and Red Cross organisation. He published monographs on lumbar puncture and gastric ulcer and contributed to encyclopædic works, including those of Nothnagel and Ebstein. A very important work of his on the microscopy and chemistry of the puerperal period has gone through five editions. His death appears to have been quite unexpected. His age was 56 years.

NATIVE RACES AND THE LIQUOR TRAFFIC.—The United Committee for the Prevention of the Demoralisation of Native Races by the Liquor Traffic, which regrets that "in nearly every part of the world where missionaries are at work the gin bottle is present, also making the natural difficulties of the work much greater and sometimes undoing good that has been achieved at great sacrifice," has issued a grave indictment against the Government Committee of Inquiry with regard to the liquor traffic in Southern Nigeria. In a pamphlet entitled "An Examination and Reply," the Native Races Committee accuses the Government Committee of ignoring a statement prepared by the Native Races Committee, asserts that influences were at work in the colony calculated to deter the natives from speaking against the liquor traffic, and suggests that the Government Committee was biased. The pamphlet also states that the importation of spirits in Southern Nigeria is steadily and rapidly increasing, the result being much drunkenness, that gin is used as a form of currency, that fines have been paid in gin in six courts for a long period, and that the fact that children are pawned for gin throughout the colony is absolutely ignored by the committee in its report. The publication of these grave statements by a responsible committee, which has for its president the Duke of Westminster and for its chairman the Bishop of London, calls for some rejoinder.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of the Comitia of the Royal College of Physicians and of the Council of the Royal College of Surgeons on April 28th and May 12th respectively, Diplomas of L.R.C.P. and M.R.C.S. were conferred upon the under-mentioned gentlemen and one lady (Miss D. R. C. Patell, of Bombay, the first lady to obtain these diplomas) who have passed the Final Examination in Medicine, Surgery, and Midwifery, and have complied with the necessary by-laws:—

Oswald John William Adamson, King's College Hospital; Fleetwood Stirling Digby Berry, Guy's Hospital; Noel William Berry, King's College and St. George's Hospitals; David Forbes Borrie, New Zealand and Edinburgh Universities; Robert Francis Bridges, B.A. Oxon., Oxford University and London Hospital; Leonard Buckley, M.B., Ch.B. Liverp., Liverpool University; John Southerden Burn, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Ronald Herbert Candy, London Hospital; *Noel Leicester Clarke, B.A. Cantab., Cambridge University and London Hospital; William Thomas Clarke, Bristol University and Guy's Hospital; Frederick John Cleminson, M.A., B.C. Cantab., Cambridge University and University College Hospital; Reginald Charles Clifford, St. Bartholomew's Hospital; Ardeshir Koyaji Contractor, L.M.S. Bombay, Bombay University and University College Hospital; William Russell Cooper, Glasgow University and University College Hospital; Donald Maxwell Cox, Charing Cross Hospital; Rustom Kershasp Dadachanji, L.M.S. Bombay, Bombay University and London Hospital; Ralph George Dainty, Charing Cross Hospital; William Chalmers Dale, St. Bartholomew's Hospital; Cecil Alfred Dottridge, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Henzell Howard Dummere, London Hospital; Geoffrey Dunderdale, Guy's Hospital; William Alexander Dunn, Otago University and St. Thomas's Hospital; William Harold Fulford Eales, Cambridge University, Middlesex Hospital, and Birmingham University; Samuel James Elkin, M.D., C.M. Manitoba, Manitoba University and London Hospital; Robert Ellis, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Joseph Tylor Fox, B.A. Cantab., Cambridge University and London Hospital; Frank Austin French, St. Mary's Hospital; Lennard Game, King's College Hospital; Raymond Gamlin, Cambridge and Liverpool Universities; Robert William Beor Gibson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Cyril Searle Gideon, M.B. Toronto, Toronto University and London Hospital; Philip Hamill, M.A. Cantab., D.Sc. Lond., Cambridge University and St. Bartholomew's Hospital; Joseph Cecil Harris, L.D.S.Eng., Birmingham University; Robert Francis Higgin, B.A. Cantab., Cambridge University and Middlesex Hospital; Arthur Noel Hodges, B.A. Cantab., Cambridge University and London Hospital; Ernest Howden, Leeds University; Stanley Hoyte, King's College and Westminster Hospitals; Herbert Richard Barnes Hull, Bristol University; Robert Ashton Jackson, M.B., Ch.B. Manchester, Manchester University; Roderick Jackson, Liverpool University; †Cecil Augustus Joll, M.B., B.S. Lond., L.D.S. Eng., Bristol University; Evan Hugh Jones, St. Thomas's Hospital; Pendrell Charles Varrier Jones, M.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Walter Foulkes Jones, B.A. Cantab., Cambridge University, King's College, and St. George's Hospitals; Fritz Kahlenberg, Otago University and Guy's Hospital; George Gibson Lyttle, M.B., B.S. Lond., National University, Belfast; Mahmoud Foad Maaz, Cairo and London Hospital; Frederick Norton Haylock Maidment, London Hospital; Kenneth Dalrymple Marriner, St. Thomas's Hospital; George Maxted, Guy's Hospital; Archibald Moir, M.B. Toronto, Toronto University and London Hospital; *Andrew Samuel Moorhead, M.B. Toronto, Toronto University and London Hospital; Frederick Morres, Guy's Hospital; George Ernest Neligan, B.A. Oxon., Oxford University and London Hospital; John Henry Newmarch, B.A. Cantab., Cambridge University and St. George's Hospital; Albert Edgar Nicholls, University College, Cardiff, and London Hospital; Henry Maurice Dunlop Nicoll, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Charles Noon, St. Bartholomew's Hospital; Ernest Nuttall, Manchester University; Thomas Edward Osmond, Cambridge University and St. Bartholomew's Hospital; Alexander Croydon Palmer, London Hospital; Dossibai Rustomji Cawasji Patell, L.M.S. Bombay, Bombay University and Royal Free Hospital; Percy Vivian Giles Pedrick, L.D.S. Eng., Guy's Hospital; William Maxwell Penny, Cambridge University and Middlesex Hospital; Archie Periman, Leeds University; Archibald Bruce Pettigrew, Sheffield University; Friedrich Otto Maximilian Pfister, M.D. Heidelberg, Heidelberg University and Middlesex Hospital; Alfred Percy Phillips, St. Bartholomew's Hospital; Francis Stedman Poole, B.A. Cantab., Cambridge University and Charing Cross Hospital; John Bernard Pulling, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Arthur Errington Rayner, B.A. Cantab., Cambridge University and Guy's Hospital; Norbert Leo Maxwell Reader, Leeds University and Guy's Hospital; Albert Hill Rolph, M.B. Toronto, Toronto University and London Hospital; James Bruce Ronaldson, B.A. Cantab., Cambridge, Dublin, and Edinburgh Universities and Charing Cross Hospital; Johannes Zacharias Human Rousseau, B.A., M.B., Ch.B. Edinburgh, Edinburgh University; Francis Donaldson Saner, Cambridge University and Guy's Hospital; Hassan Ibrahim Shaheen, Cairo and Guy's Hospital; Neville Alexander Dyce Sharp, Guy's Hospital; William Shipton, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Ralph Gillespie Smith, Charing Cross Hospital; Richard William Starkie, Manchester University; Reginald Samuel Sherrard Statham, Bristol University and Westminster Hospital; Thomas Duncan Macgregor Stout, Guy's Hospital; Thomas Edmund Alexander Stowell, St. Thomas's

Hospital; Harold Thwaite, Birmingham University; Cecil Carrington Tudge, Guy's Hospital; *George Ernest Vilvandré, London Hospital; Leslie Ferguson Kennedy Way, St. Bartholomew's Hospital; Charles Witts, Guy's Hospital; Raphael Yood, Manchester University; and Walter Ansley Young, Madras and London Hospital.

* M.R.C.S. Diploma granted on April 14th, 1910.
† L.R.C.P. Diploma not yet conferred.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Diploma of Fellow has been conferred upon Davis Woodcock Daniels, M.B., B.S. Lond., L.R.C.P., M.R.C.S., of St. Mary's Hospital, who has now attained the age of 25 years.—Licences to practise dentistry were conferred by the Council of the College on May 12th on 35 gentlemen who have passed the requisite examinations and have complied with the by-laws. The following is a list of the names of the successful candidates:—

Henry Kiver Allison, D.D.S. Penn., Pennsylvania University and Royal Dental Hospital; Ernest Beddoes, Liverpool University; Herbert Stuart Blackmore, University College and Royal Dental Hospital; Ernest Benjamin Brown, Middlesex and National Dental Hospitals; Percivale James Burton, Bristol University; William Hern Cornelius, Middlesex and Royal Dental Hospitals; Arthur Josiah Dabbs, Birmingham University; Joseph Henry Creasy Davis, Middlesex and Royal Dental Hospitals; Niel Edgar, Guy's Hospital; James Mutrie Frank, Liverpool University; Herbert Edward Fullerton, Durham, Charing Cross and Royal Dental Hospitals; Harold Harding Glover, Guy's Hospital; Montague Nathaniel Goodman, Charing Cross and Royal Dental Hospitals and Birmingham University; Edwin Allan Thomas Green, Manchester University; Bernard Grellier, Charing Cross and Royal Dental Hospitals; Frank James Hayman, Bristol University; Kenneth George Hoby, Edward Palmer Hudson, and Frank Augustus Lowe, Guy's Hospital; George Bertrand Lucas, Charing Cross and Royal Dental Hospitals; Hubert Stanley Morris, Archie Ernest Frederick Peaty, Alfred Graham Poock, B.A. Cantab., and Augustus John Reynolds, Guy's Hospital; Alexander James Roberts, Birmingham University; Wilfrid Aubrey Rowe, Charing Cross and Royal Dental Hospitals; Charles Frederic Leyson Ruck, Guy's Hospital; Walter Herman Scales, Liverpool University; Alfred Gladstone Scott, Birmingham University; James Bennett Sharp, Charing Cross and Royal Dental Hospitals; John Francis Sheahan, Westminster, Charing Cross, and Royal Dental Hospitals; William Skerritt, Sheffield University; Charles Foote Snow, Guy's Hospital; Claud Stacey, Middlesex and National Dental Hospitals; and Charles Reynolds Woodruff, L.R.C.P., M.R.C.S., St. Bartholomew's and Royal Dental Hospitals.

At the First Professional Examination in Anatomy and Physiology for the Diploma of Fellow held on May 5th, 6th, 10th, 11th, 12th, and 13th 135 candidates presented themselves, of whom 73 per cent. were referred and 27 per cent. were approved. The following is the list of successful candidates, amongst whom is one lady (Miss M. M. Basden):—

John Wroth Adams, St. Bartholomew's Hospital; James Noble Armstrong, Dublin University; Margaret Mary Basden, Royal Free Hospital; Charles Walter Gordon Bryan, L.R.C.P., M.R.C.S., St. Mary's Hospital; Edward Calvert, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Noel Godfrey Chavasse, B.A. Oxon., Oxford and Liverpool Universities; Frederick John Cleminson, M.A., B.C. Cantab., L.R.C.P., M.R.C.S., Cambridge University and University College Hospital; John Colgan, Trinity College, Dublin; Ernest Marshall Cowell, M.D., B.S. Lond., L.R.C.P., M.R.C.S., University College Hospital; Harry Cecil Rutherford Darling, M.B., B.S. Lond., L.R.C.P., M.R.C.S., University College; Edward David Davis, L.R.C.P., M.R.C.S., L.D.S. Eng., Charing Cross Hospital; Alfred Evan Lewis Devonald, Cork and St. George's Hospital; Frank Holt Diggle, M.B., Ch.B. Vict., L.R.C.P., M.R.C.S., Manchester University; George Edward Genge-Andrews, Guy's Hospital; John Torbet Smith Gibson, St. Mary's Hospital; Thomas Twistington Higgins, M.B., Ch.B. Vict., L.R.C.P., M.R.C.S., Manchester University; Alfred John Hull, L.R.C.P., M.R.C.S., Guy's Hospital; Charles Eric Sweeting Jackson, St. Mary's Hospital; John Cecil Jefferson, Manchester University; William Alexander Hogg McKerrow, M.B., Ch.B. Aberd., Aberdeen University; George Sefton Miller, Guy's Hospital; Andrew Samuel Moorhead, M.B Toronto, L.R.C.P., M.R.C.S., Toronto University and University College; John Morley, M.B., Ch.B. Manch., Manchester University; Albert Clifford Morson, L.R.C.P., M.R.C.S., Middlesex Hospital; Krishnan Gopinath Pandalai, M.B. Madras, Madras and Middlesex Hospital; Courtenay Henry Gerard Pochin, Guy's Hospital; Balcombe Quick, M.B., B.S. Melb., Melbourne University and Middlesex Hospital; John Frederick Gwyther Richards, Guy's Hospital; William Robinson, Guy's Hospital; Bidhan Chandra Roy, M.D. Calcutta, L.R.C.P., M.R.C.S., Calcutta University and St. Bartholomew's Hospital; Douglas Wilberforce Smith, M.B., B.S. Lond., L.R.C.P., M.R.C.S., Edinburgh University, Guy's and Middlesex Hospitals; Reginald Westmore Spence, King's College; Francis Theodore Talbot, M.B., B.C. Cantab., L.R.C.P., M.R.C.S., Cambridge and Leeds Universities; Ronald Ogier Ward, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; Hugh Cameron Wilson, M.D., Ch.B. Edin., Edinburgh University and King's College; and Duncan Wood, L.R.C.P., M.R.C.S., London Hospital.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the recent examinations in Glasgow for the Diploma of Public Health the following candidates passed the necessary examinations:—

Malcolm Campbell, Thomas Campbell, Captain John Davies, William Arnott Dickson, Alexander Stewart Gordon, William Grier, Samuel Alexander M'Clintock, Frank Bedingfeld Macdonald, Walter James M'Feat, John Macintyre, Louis William Crombie Macpherson, George Glendinning Middleton, Peterawald Pattison, Oswell Everard Powell, John Reid, Henry Drummond Robb, John Scott, Hugh Rodger Sloan, and Arthur Samuel Walker.

The following candidates passed the first part of the examination:—

Ernest Hamilton Cramb, Jane Reid Foulds Gilmour, Mary Philip Graham, John Muir Kelly, David James M'Leish, Robert Alexander Mackenzie Macleod, Malcolm Bernard Gathorne Sinnette, Robert Tannahill Young, William Young, and William Alexander Young.

The following candidate passed the second part of the examination:—

Bhola Nath.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF IRELAND.—At the Conjoint Examinations held in April for the Final Professional Examination, the following candidates passed:—

A. M. J. Blake, H. F. Blood, V. J. P. Clifford, P. A. Doyle, E. P. Harding, J. T. Heffernan, A. K. Hogan, H. Hunt, C. Kelsall, D. J. Lyne, J. T. McKee, J. J. O'Connor, L. C. Rorke, H. B. Sherlock, and A. H. T. Warnock.

At the Conjoint Examinations held in May for the Diploma in Public Health the following candidates passed:—

Walter Biggar Bannerman, Elizabeth Hamilton Brook, Evelyn Elizabeth Dickinson, Robert Thomas Edwards, Charles Conway Fitzgerald, William James Deacon Inness, Hubert Peché Lobb, James King Patrick, Henry Joseph Raverty, and William de Wever Wishart.

ALCOHOL IN CHEMISTS' SHOPS IN THE UNITED STATES.—At a meeting of the American Pharmaceutical Association recently held in Richmond, Va., a most important and drastic decision was come to by the association advocating the abolition of alcohol as an article of sale in American druggists' shops. The association further earnestly urged the elimination of all traffic in "habit-forming drugs" as harmful to public morals and detrimental to the best interests of the American people.

SMALL-POX IN THE TOWN OF COBALT.—Small-pox has broken out in Cobalt, the silver-mining town in Northern Ontario. On May 4th there were 17 patients in the isolation hospital, four in one of the mines, and two segregated in houses in the town. All but two of the cases which have occurred so far have been of a mild type. 1500 people have already been vaccinated in Cobalt, and the mines have instituted a system of tickets whereby, if an employee is not vaccinated within a certain number of days, he is discharged.

BY an obvious slip in our brief obituary notice of His Majesty King Edward VII. we alluded to his dangerous attack of typhoid fever as having occurred in 1872. The Thanksgiving Service for his recovery took place in that year, his illness having been in the autumn of the previous year. It has been pointed out also that we have made no reference to the fact that his late Majesty was President of St. Bartholomew's Hospital for a long period of years, but we could not attempt to mention by name the numerous hospitals, institutions, and charities to which he gave not only his name but his active support.

SWANSEA HOSPITAL.—The Swansea Hospital was established early in the last century, and the present buildings are between 40 and 50 years old. Additions and alterations have been made from time to time, but it has now been decided that considerable enlargement is necessary. By building additional storeys it will be possible to add five new wards with a total accommodation for 82 patients. The roofs of the new buildings are to be flat and thus available for recreation or for open-air treatment. New kitchens, servants' bedrooms, dispensary, drug store, and waiting-rooms, together with accommodation for manufacturing aerated waters, are all included in the scheme of alterations which has been adopted by the board of management.

ROYAL COLLEGE OF SURGEONS IN IRELAND: GENERAL MEETING AND ELECTION OF OFFICERS.—A meeting of the College will be held on Saturday, June 4th, at 1 o'clock, to receive the annual report of the Council. Notices of motion received by the Registrar on or before Tuesday, May 24th, will have priority of consideration over any others which may be submitted. A meeting of the College will also be held on Monday, June 6th, at 1 o'clock, pursuant to the provisions of the Charters, to elect a President, Vice-President, Council, and secretary of the College

for the ensuing year. Fellows who may desire to have their names printed on the list of candidates for office will please signify their wish by letter to the Registrar, at the College, on or before Tuesday, May 24th, as it is necessary to include the names in the voting papers which are forwarded to the Fellows, and no candidate is eligible unless his application is received within the date specified.

THE PELLAGRA FIELD COMMISSION. — The following telegram was received from Dr. Sambon, who is at present in Italy in charge of the Pellagra Field Commission. It was dated May 13th and reached us too late for insertion last week:—"The Commission has definitely proved that maize is not the cause of pellagra. The parasitic conveyer is *Simulium reptans*." The Pellagra Investigation Committee in London has no further information as to the nature of the proof on which Dr. Sambon bases his conclusions. Captain Siler of the United States Army, who accompanied Dr. Sambon to Italy, has returned to London, and at a meeting of the Committee held on May 11th he reported that Dr. Sambon was carrying on his investigations chiefly upon epidemiological lines on methods which involved a considerable expenditure. It may be well, therefore, to remind our readers that money is required for further work. Several foreign Governments have invited the Committee to allow Dr. Sambon to prosecute the study of pellagra within their jurisdiction.

THE SANITARY CONDITION OF MONMOUTHSHIRE COLLIERIES.—A few months ago Mr. J. W. Davies, medical officer of health of the Ebbw Vale urban district, drew attention to the insanitary condition of the underground workings of some of the Monmouthshire collieries, and in a report which he subsequently sent to the Local Government Board he particularised several fatal cases of some form or other of blood poisoning contracted, in his opinion, in the collieries. It appears that Mr. Davies has been persistently refused permission to inspect the colliery workings in order that he might investigate for himself the existing conditions. The Home Secretary has now appointed a committee to report upon the matter. The members of the committee include Mr. J. S. Martin, I.S.O., and Mr. C. L. Robinson, two of His Majesty's inspectors of mines, together with Dr. D. Rocyn-Jones, medical officer of health of the Monmouthshire county council, Dr. N. N. Wade of Risca, and Mr. Storrer, veterinary surgeon of Abergavenny.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.

With a Prehistoric People. The Akikúyu of British East Africa. By W. Scoresby Routledge, M.A. Oxon., and Katherine Routledge (born Pease), Som. Coll. Oxon., M.A. Trin. Coll., Dublin. Price 21*s.* net.

BAILLIÈRE, TINDALL, AND COX, London.

Student's Handbook of Operative Surgery. By William Ireland de C. Wheeler, (Mod.) B.A., M.D. (Dub. Univ.), F.R.C.S.I. Second edition. Price 7*s.* 6*d.* net.

Manual of Tropical Medicine. By Aldo Castellani, M.D. Florence, Privat-Docent, Naples; and Albert J. Chalmers, M.D. Vict. & Liv., F.R.C.S. Eng., D.P.H. Camb. Price 21*s.* net.

Insanity in Every-day Practice. By E. G. Younger, M.D. Brux., M.R.C.P. Lond., D.P.H., &c. Second edition, revised and enlarged. Price 3*s.* 6*d.* net.

BERGMANN, J. F., Wiesbaden. (F. BAUERMEISTER, Glasgow.)

Die Direkte Laryngoscopie, Bronchoskopie und Oesophagoskopie. Ein Handbuch für die Technik der Direkten Okularen Methoden. Von Dr. med. et phil. W. Brünings. Price M.14, or 14*s.*

FISCHER, GUSTAV, Jena.

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Erste und zweite Lieferung. Dritte Lieferung, vierte Lieferung und fünfte Lieferung. Preis, je: M.5. (Das "Handbuch der vergleichenden Physiologie" erscheint in etwa 30 Lieferungen zum Preise von je 5 mark.)

Handbuch der Gesamten Therapie. In sieben Bänden. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. Vierte umgearbeitete Auflage. Elfte Lieferung. Preis M.4.50 (Preis des vollständigen Werkes: M.100; geb. M.117.50).

Die Indikationen zu chirurgischen Eingriffen bei inneren Erkrankungen. Von Prof. Dr. Hermann Schlesinger. Mit einem Anhange von Prof. Dr. Julius Schnitzler. Zweite vollkommen umgearbeitete und erweiterte Auflage. Price, paper, M.12; bound, M.13.50.

HOLT, HENRY, AND CO., New York. (BELL, GEORGE, AND SONS, LIMITED, London.)

Eugenics. The Science of Human Improvement by Better Breeding. By C. B. Davenport. Price 2*s.* net.

IMPRIMERIES "INDEPENDENTA," Bucarest.

Bulletin de la Société des Sciences Médicales de Bucarest, 1908–1909. Price not stated.

KING, JOHN K., AND SON, Manchester.

Dental Medicine. A Manual of Dental Materia Medica and Therapeutics. By Ferdinand J. S. Gorgas, A.M., M.D., D.D.S. Eighth edition. Revised and enlarged. Price not stated.

LAURIE, T. WERNER, London.

Biography for Beginners. Being a Collection of Miscellaneous Examples for the Use of Upper Forms. Edited by E. Clerihew, B.A. With 40 Diagrams by G. K. Chesterton. Price 1*s.* net.

LIPPINCOTT (J. B.) COMPANY, Philadelphia and London.

International Clinics. Edited by Henry W. Cattell, A.M., M.D. Philadelphia, U.S.A., with Collaboration. Volume I. Twentieth Series. 1910. Price 35*s.* net.

PHARMACEUTICAL PRESS, THE, London. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

The Pharmaceutical Pocket Book, 1910–11. Edited by John Humphrey. Price 3*s.* 6*d.* net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BANKART, A. S. BLUNDELL, M.C. Cantab., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Belgrave Hospital for Children.

BARLING, SEYMOUR, M.B., M.S. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the General Hospital, Birmingham.

DAVIES, D. LEIGHTON, M.D., M.S. Lond., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Assistant Ophthalmic Surgeon to the Cardiff Infirmary.

THOMPSON, J. E., M.B., Ch.B. Aberd., has been appointed Resident Medical Officer at the Ashton-under-Lyne Workhouse.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALBERT DOCK HOSPITAL, Connaught-road, E.—Senior House Surgeon. Salary £75 per annum, with board, residence, and washing. Also House Surgeon. Salary £50 per annum, with board, residence, and washing.

BENENDEN SANATORIUM.—Assistant Medical Officer, unmarried. Salary £80 per annum, with board, lodging, and laundry.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES, Birmingham.—Clinical Assistant for three months. Salary at rate of 52 guineas per annum.

BRECKNOCK COUNTY AND BOROUGH INFIRMARY.—Resident House Surgeon, unmarried. Salary £120 per annum, with apartments, board, attendance, &c.

BRISTOL ROYAL INFIRMARY.—Honorary Medical Registrar.

BURY INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

BUXTON, WYE HOUSE ASYLUM.—Assistant Medical Officer. Salary £120 per annum.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Surgeon, unmarried. Salary £80 a year, with board, lodging, and washing. Also Honorary Surgeon.

CHELMSFORD, ESSEX EDUCATION COMMITTEE.—School Medical Officer. Salary £350 per annum.

CHILDREN'S REST CONVALESCENT NURSING HOME, Roehampton, S.W.—Honorary Physician.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Honorary Aural Surgeon.

DUNDEE SCHOOL BOARD.—Chief Medical Officer. Salary £400 per annum.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, residence, and laundry.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL. — House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, and washing. Also House Surgeon and House Physician, early in July.

HUNTINGDON COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum and all found.

INDIAN MEDICAL SERVICE, India Office, London.—15 Commissioners in His Majesty's Indian Medical Service.

JERSEY GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer. Salary £100, with board and lodging.

KENDAL, WESTMORLAND CONSUMPTION SANATORIUM.—Assistant Resident Physician, unmarried. Salary £100 per annum, with residence, board, &c.

LEEDS CITY INFECTIOUS DISEASES HOSPITALS AND SANATORIUM.—Two Resident Medical Officers, unmarried, for six months. Salary at rate of £110 per annum, with board, lodging, and washing.

LIVERPOOL DISPENSARIES.—Assistant Surgeon, unmarried. Salary £100 per annum, with board and apartments.

LONDON COUNTY COUNCIL.—Woman Inspector under Midwives Act, 1902, unmarried or widow. Salary £250 per annum. Also Assistant School Doctors in Public Health Department. Salary £120 per annum.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon for six months. Salary £50 per annum.

MANCHESTER WORKHOUSE, Crumpsall.—Junior Resident Assistant Medical Officer, unmarried. Salary £110 per annum, with apartments, washing, &c.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Assistant House Surgeon. Salary £75 per annum, with board, residence, and washing.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—House Physician at Northwood. Salary £75 per annum, with board, residence, and washing. Also Clinical Assistants for six months.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Albany Memorial), Queen-square, Bloomsbury.—Senior House Physician. Salary £50 per annum, with board and residence.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with board, lodging, and washing.

PRESTWICH, COUNTY ASYLUM, Manchester.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing. Also Locum Tenens, unmarried, for six to eight weeks. Salary 4 guineas per week, with apartments, board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Two House Surgeons and House Physician, each for six months. Salary £60 per annum, with board, residence, and washing.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £130 per annum, with board, lodging, and washing.

RENFREW, COUNTY COMMITTEE ON SECONDARY EDUCATION.—School Medical Inspectors for No. 1 and No. 2 Districts. Salaries £300 per annum.

ROYAL EAR HOSPITAL, Soho.—Honorary Assistant Anæsthetist.

ROYAL EYE HOSPITAL, Southwark, S.E.—Honorary Assistant Surgeon.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon. Salary £125 per annum.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

SALFORD UNION INFIRMARY.—Resident Assistant Medical Officer. Salary £120 per annum, with furnished apartments, attendance, and rations.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board, lodging, and washing.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, and residence.

TAUNTON, TAUNTON AND SOMERSET HOSPITAL.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.—Assistant Physician.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £30, with board, lodging, and laundry.

WAKEFIELD, COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE.—Lady Medical Inspector. Salary £300 per annum.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Out-patients' Physician.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry allowance provided.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £80 per annum, with board, rooms, and laundry.

Births, Marriages, and Deaths.

BIRTHS.

MORTON.—On May 13th, at The Lodge, Southbourne-road, Bournemouth, the wife of James R. Morton, M.B. Lond., M.R.C.S., L.R.C.P., of a son.

SINCLAIR.—On May 11th, at Warriston House, Edinburgh, the wife of Captain M. Sinclair, R.A.M.C., of a son.

DEATHS.

BABER.—On May 14th, at 62, Brook-street, W., Edward Cresswell Baber, M.B. Lond., aged 59. Friends kindly accept this intimation.

BURNETT.—On May 14th, William Edward Sevier Burnett, L.R.C.P., M.R.C.S., of Fairlie, Bowdon, Cheshire, aged 70 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 17th, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 11	30·17	N.E.	...	111	59	40	44	46	Cloudy
,, 12	29·61	E.	0·11	111	61	46	50	53	Cloudy
,, 13	29·67	S.E.	0·11	97	59	48	47	50	Overcast
,, 14	29·93	S.E.	0·03	119	67	50	53	57	Fine
,, 15	29·74	E.	...	109	69	50	51	53	Fine
,, 16	29·77	N.E.	...	116	74	50	49	51	Fine
,, 17	29·82	N.E.	...	82	66	50	51	53	Overcast

Notes, Short Comments, and Answers to Correspondents.

HEALTH AND CLIMATE OF PERU.

Mr. Lucien J. Jerome, British Consul-General, in his annual report just issued through the Foreign Office, observes that on the whole Peru may be said to be a healthy country, notwithstanding the fact that bubonic plague has got a firm hold on the coast towns and even in Lima itself, where, as in the neighbouring port of Callao, it is sporadic and cases are constantly occurring. Greater precautions are now taken to prevent the reintroduction of yellow fever into Peru, and the country has been quite free of this disease of recent years. From statistics covering a period of 18 years the death-rate of the town of Lima is estimated at 27·59 per 1000. In some of the parishes inhabited by Indians (natives) and by Chinese it is, however, as high as 37·40 per 1000. In fact, the highest death-rate is among the native races and the lowest among Europeans and persons descended from pure European stock. The diseases which cause the greatest mortality in Lima and Callao are tuberculosis, infantile diseases, typhoid fever, influenza, and disorders of the intestines. As regards tuberculosis, the following comparative figures for Spanish-American towns, showing the mortality per 10,000 inhabitants, are very interesting: Lima, 62·1; Caracas, 60; Rio de Janeiro, 38; Santiago, Chile, 38; Havana, 32·7; Monte Video, 16; Buenos Ayres, 14·2; Mexico City, 14; San Salvador, 13·7. Europeans suffer very much in Lima from malaria and from the very enervating climate, which saps all vitality and makes anyone in the least inclined to be influenced by these conditions extremely, if not dangerously, ill. The following figures show the development of bubonic plague from its appearance in Peru in 1903:—Number of cases in 1903 (October, November, and December), 9; in 1904, 377; in 1905, 145; in 1906, 110; in 1907, 171; in 1908, 249. In 1908, out of a total number of 249 cases 117 proved fatal, showing a death-rate from this disease of 47 per cent. In each year a great increase in the number of cases has been noted in the month of April.

The climate of Peru, Mr. Jerome remarks, is a surprise, and it is an unexpected relief to the traveller coming south from Panama and Guayaquil, where the heat is excessive, to meet, shortly after leaving the latter place, with the cool south-west breezes. The mean annual temperature of the coast provinces is 68° F.; in the hotter months—January and February—the mean temperature is between 82° and 86°. The dry heat is not oppressive, and after 11 A.M., when the torrid sun has rarefied the atmosphere over the desert, sea air comes rushing to this area of low pressure, all life is refreshed by the breeze, and often a little rain is scattered over the maritime range. In the evening, when the surface of the desert grows cool, the wind sets out to sea again, bringing cool breezes from the mountains. Inland, as in the case of the valley of the Rimac, the climate is much more normal for the latitude than that of the coast, and while at Callao near the mouth of the river one finds a climate resembling that of Southern Europe, at Chosica, some 30 miles to the east, one begins to get a climate not unlike that of Cuba or the coast provinces of Mexico.

GUINEA-WORM IN UNUSUAL POSITION.

To the Editor of THE LANCET.

SIR,—I think the following case may be of some interest on account of the position.

A Lascar on board had a Filaria medinensis, or Guinea-worm, the position being one inch above the coccyx, and half an inch to the right of the spine; it was 2 feet 3 inches long.

I am, Sir, yours faithfully,

P. C. P. TAYLOR.

H.M. Transport *Rewa*, Southampton, May 13th, 1910.

HABIT-FORMING DRUGS.

THE misuse of habit-forming drugs has been regarded for some time as one of the great national evils in the United States. The Department of Agriculture has taken up the subject, collecting statistics and analysing so-called "cures," and from time to time has published the results in order to inform the public of the menace to the public welfare in the indiscriminate sale of habit-forming drugs. The latest bulletin, by Dr. L. F. Kebler ("Habit Forming Agents," Farmers' Bulletin, No. 393, United States Department of Agriculture, Washington, 1910, pp. 19) shows that the amount of opium consumed in the United States per capita has been doubled within the last 40 years, although no increase has been observed during the past decade. It is estimated that about 150,000 ounces of cocaine are consumed annually in the United States, in addition to large quantities of acetanilid, phenacetin, antipyrine, caffeine, chloral hydrate, codeine, dionine, and heroin, in spite of anti-narcotic legislation, publicity, and other deterrent factors. In controlling the evil, one great step in advance was made by enacting laws requiring a declaration on the label of the quantity of certain habit-forming drugs contained in remedies intended for human or

veterinary use. But the consumer is usually ignorant of the harmful nature of these drugs and the Department of Agriculture is endeavouring to meet the difficulty by public lectures and by publishing warning bulletins which are being freely distributed throughout the country. The various classes of remedies are considered in the bulletin, starting with "soothing syrups" for children. In a representative selection of 13 preparations, nine contained morphine, while codeine was found in one, heroin in one, chloral hydrate in one, opium in one, and cannabis indica in one. Soothing syrups containing these habit-forming drugs, when used without discrimination, are held by Dr. Kebler to induce tendencies which under unfortunate conditions later in life may be aroused to activity and develop an evil habit of one form or another. The number of remedies concocted for the treatment of diseases of the nose and lungs is legion, their vaunted values depending, as a rule, upon the presence of cocaine, chloral hydrate, codeine, heroin, morphine, opium, and tobacco. The absence of a recognised treatment for eradicating asthma has led to the marketing of numerous so-called "cures," for which the public pay excessive prices. There are a goodly number exploited at present which have as their basic agents cocaine, morphine, opium, or chloral hydrate. An example of the cocaine type consists of a bottle of medicine containing cocaine to be used as a spray with an atomiser. The price of the latter is $12.50. It is true that the amount of cocaine introduced into the nose by means of a spray is small, but it is well known that exceedingly small amounts are required, when used in this manner, to produce constitutional effects. In fact, this is the popular manner in which cocaine is taken by those addicted to its use. They are commonly known as "sniffers" or "coke sniffers," because of the fact that cocaine is sniffed into the nose. A very great number of advertised "catarrh cures" contain cocaine, and lead to the contraction of the habit. The danger of such preparations in the hands of the public is shown by the fact that the medicines are supplied so long as the patient is able and willing to pay for them. It is significant that the demand for these preparations is greatest in those States where the most stringent anti-narcotic laws are in force.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—With reference to a short paragraph which appeared in some of the Liverpool newspapers this week, alluding to an address which I delivered in London last Monday on the subject of Demoniacal Possession, I should like it to be known that the paragraphs in question were sent to these papers without my consent or approval; that the wording of some of them was not strictly correct; and that I am very sorry such notices appeared.—I am, Sir, yours faithfully,

Liverpool, May 14th, 1910. C. WILLIAMS.

Dentocaine.—We do not quite understand our correspondent's questions. If he had written out a concrete case and entrusted us with the names the situation would have been much plainer. Every man on the Medical Register is qualified to practise dental surgery, but in our opinion the words "Dental Surgeon" on a door-plate might imply the possession of some special dental qualification. We do not think that a man should so describe himself on the door-plate that the public might regard him at the same time as a general practitioner and as a dental specialist, when he has no diploma proving a special dental training.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 15, Cavendish-square, W. (temporary address during building of new house).

MONDAY.

SPECIAL MEETING OF FELLOWS OF THE SOCIETY at Morley Hall, George-street, Hanover-square, W.: at 5 P.M.

Discussion:
On Vaccine Therapy, its Administration, Value, and Limitations (opened by Sir Almroth Wright, F.R.S.).
At this, the first meeting, the following gentlemen will continue the Discussion:—Dr. C. Slater, Dr. L. Colebrook, Dr. StClair Thomson, and Dr. W. d'Este Emery.

ODONTOLOGICAL SECTION (Hon. Secretaries—D. P. Gabell, E. B. Dowsett, J. Howard Mummery) at 15, Cavendish-square, W.: at 8 P.M.

Paper:
Mr. Douglas E. Caush: The Spindles of Von Ebner (illustrated by lantern slides).

Casual Communications:
Mr. Arthur S. Underwood: Some Egyptian Skulls.
Mr. G. Thomson: A Case showing the Result of Extraction of the Six-year-old Molars.

TUESDAY.

MEDICAL SECTION (Hon. Secretaries—A. M. Gossage, A. F. Voelcker): at 5.30 P.M.

Annual Meeting for Election of Officers and Council, followed by Ordinary Meeting.

WEDNESDAY.

SPECIAL MEETING OF FELLOWS OF THE SOCIETY at Morley Hall, George-street, Hanover-square, W.: at 5 P.M.

Discussion:
On Vaccine Therapy, its Administration, Value, and Limitations (re-opened by Dr. Hale White, and continued by the following gentlemen):
Dr. J. W. H. Eyre, Sir W. Watson Cheyne, Bt., C.B., F.R.S., Dr. John Matthews, Dr. Harold A. Des Vœux, Dr. H. W. Bayly, Dr. A. Butler Harris.

THURSDAY.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION (Hon. Secretaries—W. J. Gow, G. F. Blacker): at 7.45 P.M.

Annual General Meeting.—Election of Officers and Council.

Papers:
Dr. F. J. McCann: Cæsarean Section in the Treatment of Eclampsia Gravidarum.
Dr. A. J. Wallace: Contribution to the Life-history of Fibromyomata of the Uterus.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—E. I. Spriggs, J. P. Lockhart Mummery, J. T. Leon) at 11, Chandos-street, W.: at 4.30 P.M.

Cases:
Dr. E. Bellingham Smith: Amaurotic Family Idiocy.
And other cases.

SECTION OF ANÆSTHETICS (Hon. Secretaries—Llewelyn Powell, R. W. Collum): at 6 P.M.

Annual General Meeting: Election of Officers and Council for Session 1910-11.

EPIDEMIOLOGICAL SECTION (Hon. Secretaries—W. H. Hamer, G. S. Buchanan): at 8.30 P.M.

Paper and Discussion.

SATURDAY.

BALNEOLOGICAL AND CLIMATOLOGICAL SECTION (Hon. Secretaries—Septimus Sunderland, F. A. de T. Mouillot).
Provincial Meeting at Buxton.

Annual General Meeting. Election of Officers and Council for Session 1910-11.
Visits to Devonshire Hospital, Town Baths, Examination of Cases, Receptions, &c.
Reserved carriage leaves St. Pancras at 10.5 A.M., returning on Monday, May 30th, at 9.50 A.M.
Programme will be sent on application to Dr. Sunderland.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8 P.M., Annual Oration and Conversazione. Orator—Mr. W. H. Battle.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.C.

TUESDAY.—8.15 P.M., Dr. Major Greenwood: The Policy of the English Poor-Law and its Proposed Medical Reform.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—8.30 P.M., Dr. R. Howard (Zanzibar): Functional Neuroses in Dark Races.—Dr. H. S. Houghton (Wuhu): Notes on Infection by Schistosomum Japonicum (from the Laboratory of the Wuhu Hospital).—Dr. W. Nicoll: The Bionomics of Helminths.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. T. C. Fox: Clinique (Skin). 5.15 P.M., Lecture:—Mr. H. J. Paterson: The Simulation of Gastric Disease by Chronic Appendicitis.
TUESDAY.—4 P.M., Dr. H. Mackenzie: Clinique (Medical). 5.15 P.M. Lecture—Mr. A. H. Tubby: Treatment of Lateral Curvature of the Spine in Children.
WEDNESDAY.—4 P.M., Mr. E. L. Evans: Clinique (Surgical). 5.15 P.M. Lecture:—Dr. J. Collier: Myelitis.
THURSDAY.—4 P.M., Dr. C. O. Hawthorne: Clinique (Medical). 5.15 P.M., Lecture:—Dr. G. Pernet: Lupus Erythematosus.
FRIDAY.—4 P.M., Dr. D. Grant: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Armour: Operations for Appendicitis.
TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 11.30 A.M., Demonstrations in Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Low: Insects as Carriers of Disease in Tropical Medicine.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Bernstein: What can be Learnt from a Blood Examination.
THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery. (Lecture I.)
FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases. 2 P.M., Medical and Surgical Clinics, X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pritchard: Clinical Pathology.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. R. Carling: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 3.15 P.M., Special Lecture: Mr. R. Carling: Cancer of the Intestines.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. R. Bradford: Chronic Peritonitis.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4 P.M., Lecture:—Dr. Acland: Inflammatory Lesions in the Neighbourhood of the Diaphragm.

THURSDAY.—Dr. Wethered: Demonstration at Frimley Sanatorium.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY AND FRIDAY.—3.45 P.M., Lecture:—Mr. C. Nourse: External and Middle Ear.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture.—Dr. D. Ferrier.

FRIDAY.—3.30 P.M., Clinical Lecture:—Mr. L. Paton: Optic Neuritis.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

THURSDAY.—4 P.M., Demonstration:—Mr. Kellock: Selected Surgical Cases in the Ward.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark.

THURSDAY.—6 P.M., Lecture: Mr. G. T. B. James: Binocular Vision in its Relation to Some of the Refractive and Muscular Anomalies of the Eye. (Any practitioners and students interested in the subject are invited to attend.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY (May 31st) AND FRIDAY (June 3rd).—4.30-5.30 P.M., Honorary Staff: Post-Graduate Clinical Demonstration (Medical, Surgical, and Special Departments).

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.),

TUESDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (25th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (26th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (27th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (28th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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